

VOLUME II

**Pomona Plating Responsible Party Monitoring Final Report
Pomona, Los Angeles County, California**

RESPONSIBLE PARTY WORKPLANS

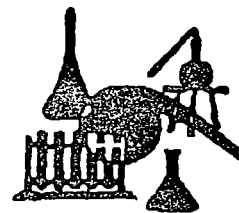
Volume II
Attachment A
J. White Laboratory & Company Workplan

TEL: (562) 927-4427
FAX: (562) 927-3018

J. WHITE LABORATORY & COMPANY

CONSULTING: PLATING - METAL FINISHING
HAZARDOUS WASTE - HAZARDOUS MATERIALS

CHEMICAL ANALYSES



6635 FLORENCE AVE.
SUITE 323
BELL GARDENS, CALIFORNIA 90201-4954

6/24/98

William E. Lewis
U.S. Environmental Protection Agency
Emergency Response Section (H-8-3)
75 Hawthorne Street
San Francisco, CA 94102

Reference: Pomona Plating Company
720 Indigo Court
Pomona, CA 91767

Subject: General Work Plan for Disposal Of Waste at Pomona Plating facility

I. Separation of all Liquid Chemical Waste in Storage Tanks & Drums.

Identify Acid and Alkaline Liquid Waste.

1. Mixing of solutions using air
PVC pipe placed in containers near bottom. Blow air into solution.
(Tanks 10 - 15 minutes, Drums 1 - 2 minutes)
2. Record pH of all tanks and drums
3. Mark all tanks and drums
 - a) Number
 - b) pH

II. Sampling of Waste for Analyses

Liquids

Mix all pH compatible solutions to obtain a Composit Sample

1. Sample taken from each pH compatible tank and drum.
 - a) Tanks 300 - 500 ml sample
 - b) Drums 25 - 50 ml sample
 - c) Place samples from a & b into a 5 gallon container
mix well
Take Composit sample

Solids

Sampling from One-Ton Waste Bags

1. Six samples taken from each bag at different locations. Starting at surface to 8 inches beneath surface of sludge.
2. All samples placed on plastic sheet, crushed, mixed.
3. Composit sample taken.

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III. Pumping of Liquid Waste For Transport And Disposal

1. All Acid Liquid Waste pumped together for transport.
2. All Alkaline Liquid Waste pumped together for transport.

IV. Waste Analyses

Liquids

Metals		EPA Methods - 200.7, Hg - Cold Vapor Technique			
Aluminum	Cadmium	Copper	Manganese	Silver	
Antimony	Calcium	Gold	Mercury	Tin	
Arsenic	Chrome (Hexavalent)	Iron	Molybdenum	Titanium	
Barium	Chrome (Total)	Lead	Nickel	Vanadium	
Beryllium	Cobalt	Magnesium	Selenium	Zinc	

Non-Metals EPA Methods - 335.2, 376.2

Cyanide (total and amenable to Chlorination)

Sulfides

pH

Specific Gravity

Sludge

RCRA Metal Analyses (24 hour Acetic Acid Leach)

Arsenic, Barium, Cadmium, Chrome, Lead, Mercury, Selenium, Silver

V. Waste Management Company

Varia Waste Management Company
12025 E. Florence Ave.
#109
Santa Fe Springs, CA 90670

EPA #982039935

VI. Pumping & Transportation

KVS Transportation
3752 Allen Road
Bakersfield, CA 93312

EPA #CAD982495608

VII. Solid Waste Disposal Site

Chemical Waste Management, Inc.
35251 Old Skyline Road
Kettleman City, CA 93239

EPA #CAT000646117

VIII. Liquid Waste Treatment & Disposal

U.S. Filter Recovery Service
5215 South Boyle Ave.
Los Angeles, CA 90068

EPA #CAD097030993

- IX. All Surfaces in the Waste Storage Areas shall be swept clean and all collected matter and debris to be placed into a one-ton waste bag for disposal, etc.

-3-

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I. Waste Disposal activities shall commence about July 20, 1998.

Respectfully,

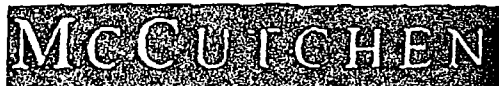
J. White
Consultant for Pomona Plating Company
JW/iy

Volume II
Attachment B
Geosyntec Original Site Workplan

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MCCUTCHEN, DOYLE, BROWN & EVERSEN, LLP

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Fax Cover Page

Date: July 10, 1998
To: David Rabbino, Esq. - United States Environmental Protection Agency
fax: 415-744-1041 voice: 415 744-1336
From: Karen A. Caffee
fax: (213) 680-6499 voice: (213) 680-6468 kcaffee@mdbe.com

Number of pages (including this page): 51
For fax transmission problems, please call (213) 680-6421.

Message: Pomona Plating Workplan

Please see attached letter and documents.

27:54:01 702

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July 10, 1998

Direct: (213) 680-6468
kcaffee@mdbe.com

VIA FACSIMILE AND FEDEX

David Rabbino, Esq.
United States Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, CA 94105-3901

**EPA Administrative Order 98-09
Proposed Workplan for Pomona Plating Site**

Dear Mr. Rabbino:

Pursuant to the requirements of the above-referenced Order, attached for your review is a copy of the proposed Workplan for the Pomona Plating site cleanup (including separate Quality Assurance and Health & Safety Plan documents). This Workplan was prepared by GeoSyntec Consultants, on behalf of our client, respondent David Distefano. Please note that the Appendices to the Health & Safety Plan are too voluminous to send by fax, but will be forwarded with the hardcopy.

We appreciate your consideration of this Workplan, and trust that it will meet EPA's requirements. If you should have any questions or comments regarding the attached Workplan, please give me or Colleen Doyle a call.

Yours very truly,

Karen A. Caffee

Enclosure

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San Francisco
Los Angeles
San Jose
Walnut Creek

Palo Alto
Washington, D.C.
Taipei

POMONA PLATING SITE POMONA, CALIFORNIA

WORKPLAN

In Response to

EPA Unilateral Administrative Order 98-09

Prepared for:

**Mr. David Distefano
572 Escalante Drive
Ivins, Utah 84738
(435) 628-0583**

Prepared by:

**GeoSyntec Consultants
2100 Main Street, Suite 150
Huntington Beach, California 92648
(714) 969-0800**



10 July 1998

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1. INTRODUCTION

1.1 General

This Workplan responds to the U.S. Environmental Protection Agency (USEPA) Unilateral Administrative Order 98-09 (the Order) for the Pomona Plating Site, located at 720 Indigo Court, Pomona, California (the Site).

This Workplan is prepared by GeoSyntec Consultants, Inc. (GeoSyntec) for Mr. David Distefano, owner of the site, for submittal to the USEPA and for implementation subsequent to USEPA approval.

1.2 Purpose and Objectives

The work described in this Workplan will achieve the following objectives:

- Respond to and implement the requirements of the Order;
- Remove from site and appropriately dispose of materials and other objects that constitute a threat to public health or welfare or the environment based upon a consideration of the factors set forth in National Contingency Plan at 40 C.F.R. § 300.415(b).
- Prepare the Site and facilities for future use (to be established as part of the work done in terms of this Workplan).

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2. SITE DESCRIPTION

The Pomona Plating Site is in an area generally zoned for light industrial/commercial use. The Site shares a common property line with a residential neighborhood to the west. The boundaries of the Site are generally Towne Street to the east, Yorkshire Street to the west, the Santa Fe railroad tracks to the north, and Arrow Street to the south.

The Site includes an approximately 10,000 square feet (930 m²) structure, an outside storage area adjacent to the Santa Fe railroad tracks, and a large asphalt parking lot. An active automotive accessories fabrication facility is located in the same complex, approximately 15 feet (4.6 m) to the east of the Site. A chain link fence with a locking gate surrounds the property of both the Site and the adjacent business. The southern half of the structure's interior space was used as a polishing room, office area, and general storage area. The northern portion of the structure housed the main plating line, the water treatment system, a small laboratory, and a chemical storage area. Portions of the building that have been damaged by fire have been repaired or are in the process of being repaired.

There are approximately 36,000 lbs. (16,363 kg) of filter cake stored in bags on the floor inside the building and 22,000 gallons (5,812 liters) of liquid chemicals stored in drums and vats outside the building. The plating line vats and treatment system inside the structure contain approximately 17,000 gallons (4,491 liters) of liquid waste. Approximately 3,600 gallons (952 liters) of liquid waste and 440 lbs. (200 kg) of solid waste are stored in drums located randomly throughout the interior of the facility, in addition to an unquantified amount of sludge that has accumulated on the floors in the plating and treatment area. The types of waste and chemicals at the Site include, but may not be limited to, nitric acid, hydrochloric acid, chromic acid, chromium, copper, and nickel.

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3. WORK TASKS

3.1 General

The tasks to be accomplished have been identified by the USEPA in the Order, Section 36(a) - (i). The following subsections describe the specific actions to be performed as parts of each task.

3.2 Identify Chemicals Compounds

The first task specified in the Order is "Identifying all chemical compounds in all vats and other containers, including sampling and analyzing all unknown chemicals and all chemicals in containers without labels or with unreadable labels." GeoSyntec will undertake the following tasks as appropriate to identify the chemicals:

- perform a Site reconnaissance and compile a sketch map showing the relative location of facilities, containers, and other materials (collectively referred hereafter as materials);
- prepare an inventory of materials at the site;
- prepare a sampling matrix and plan including a list of materials and locations that will be characterized (i.e., containers with clearly marked and intact labels shall not be sampled for characterizations);
- categorize unidentified materials and containers using the following tests, as necessary:
 - pH;
 - Acid strength (acids only);
 - Total chloride, sulfates, and nitrates;
 - RCRA metals in solids, liquids and sludges;
 - TCLP for metals in sludges and solids; and
 - Cyanide; and

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TCLP - 13 metals (mg/L)³
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- label containers with a unique identification (ID) number.

3.3 Segregate and Secure Waste

The second task specified in the Order is "Segregating and securing containers of chemical waste in groups according to compatibility of the chemical contents." GeoSyntec, with support from a qualified and licensed removal contractor as specified in Section 5.5, will undertake the following tasks as appropriate to segregate the chemicals:

- Interpret the test results from Task 1: Identify Chemical Compounds;
- Categorize chemicals based on chemical properties and potential disposal options (e.g., segregate on property, dispose to wastewater drain, Subtitle C or D landfill, or pre-treat and dispose);
- Secure the premises; # 34
- Secure the vessels (e.g., cover, check placement compatibility, provide secondary containers or overpacks);
- Sweep floors clean and collect miscellaneous trash for disposal; and
- Separate wastes into disposal categories, if practical and safe.

describe
more specifically
per #34 of UAK

3.4 Characterize and Secure Spilled Materials

The third task specified in the Order is "Characterizing, containerizing, and securing all of the spilled material encountered in the water treatment and plating areas." GeoSyntec and licensed contractors will undertake the following tasks as appropriate to secure spilled wastes:

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- characterize spilled materials located in the water treatment and plating areas using methods enumerated in Section 3.2;
- pump, absorb or otherwise transfer spilled material into appropriate containers;
- label containers with a unique ID number; and
- eliminate emptied vessel from inventory list created as part of Task 1: Identify Chemical Compounds.

3.5 Transport and Dispose of Waste

The fourth task specified in the Order is "Transporting and disposing of, in accordance with all applicable or appropriate and relevant federal and state laws, all waste hazardous substances on Site." GeoSyntec and licensed contractors will perform the following as appropriate to accomplish the transportation and disposal of wastes:

- identify usable chemical products for reuse or disposal;
- remove and dispose of waste materials as appropriate in accordance with relevant and appropriate regulations at licensed disposal facilities; this will involve a subcontract with a qualified and licensed subcontractor; or

store any usable chemical products for future use in the event that plating operations are to be resumed, or sell the materials for processing or further commercial use.

Fire damaged ordinance
comply w/ Local Fire Codes
Fire Dept. Bldg. 115
Fire Dept. "usable product" stored
Fire Dept. Authority
EPA ID #, & permit
location

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3.6 Conduct Soil Sampling

The fifth task specified in the Order is "Conducting surface and subsurface soil sampling to determine the full nature and extent of soil contamination." GeoSyntec and licensed contractors will undertake the following specific tasks as appropriate during surface and subsurface sampling:

- establish locations of sampling points on the basis of the Site reconnaissance, the inventory, and the characteristics of the materials;
- remove or core through the concrete, when necessary, and sample the upper three feet of the soil (i.e., 0 to 1 ft, 2 to 3 ft), probably with a hand auger;
- analyze soil and concrete chip surface samples for chemical contamination, based on the characteristics of the materials on or in containers above the specific sample location; and
- perform additional delineation sampling as warranted from the results of the first phase of sampling and analysis.

3.7 Treat or Dispose of Contaminated Soil

The sixth task specified in the Order is "Disposing, stabilizing, or treating grossly contaminated soils found at or near the surface at the direction of the OSC." GeoSyntec and qualified contractors will perform the following tasks during treatment and/or disposal of the soil, as appropriate:

- develop extent of contamination maps and removal plans for affected soils;
- categorize the subsurface based on level and type of contamination and determine appropriate treatment or disposal; and

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- work with a qualified and licensed contractor to excavate, treat, haul and dispose of the wastes in accordance with all applicable regulations.

3.8 Provide Reports and Documentation to USEPA

The seventh task specified in the Order is "Providing EPA with copies of all documentation related to off-Site disposal of wastes including, but not limited to, manifests, waste profiles and analytical data and disposal costs." GeoSyntec will perform the following tasks:

- submit a memorandum to the On Site Coordinator on a weekly basis summarizing the progress of that week and addressing the plans for the following week; and
- submit copies of disposal documentation upon completion of the project.

3.9 Notify USEPA OSC of Work

The eighth task specified in the Order is "Notifying the EPA On-Scene Coordinator at least forty-eight (48) hours prior to any on-Site work. Notifying the EPA On-Scene coordinator at least 72 hours prior to disposal of wastes." GeoSyntec will do the following:

- maintain on-going communication each day through brief daily field meetings between the GeoSyntec representative and the OSC; and
- provide all notifications as required by the USEPA.

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3.10 Implement Post-Cleanup Sampling and Analysis

The ninth task specified in the Order is "*Providing and implementing a post-cleanup sampling and analysis plan.*" GeoSyntec will perform the following tasks as necessary:

- prepare a post-cleanup sampling plan, identifying specific areas to be sampled (e.g., wipe samples, concrete samples, wooden samples, additional soil samples); the plan will be prepared immediately following the development of removal plans described under Task 6: Treat or Dispose of Contaminated Material;
- collect and analyze the samples as the removal proceeds;
- interpret the sampling results and direct additional removal as warranted; and
- provide a final removal action close-out report to the USEPA.

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4. SCHEDULE

The proposed schedule for executing the work is shown in Exhibit 4.1. The precise duration of activities may vary depending on the results of the sampling and characterization.

The specifics of task execution will depend on the following:

- the Site inventory, (i.e., the listing of containers, their contents, and materials);
- sampling and testing results; and
- the proposed end-use of the Site (see Section 6)

Work will start within seven days of EPA approval of this Workplan or July 27, 1998, whichever is later.

On completion of the work shown on Exhibit 4.1, work to obtain permits to resume plating operations will begin. This is anticipated to take about 60 days.

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5. IDENTIFICATION OF INVOLVED PARTIES

5.1 Site Owner

The site is owned by and work will be done for:

David Distefano
572 Escalante Drive
Ivins, UT 84738

5.2 Site Agent

Work at the site is overseen by the owner's Los Angeles counsel:

Colleen P. Doyle, Esq.
McCutchen, Doyle, Brown & Enersen LLP
355 South Grand Avenue, Suite 4400
Los Angeles, CA 90071-1560
(213) 680-6446

5.3 Consultant

The owner's consultant is:

GeoSyntec Consultants
2100 Main Street, Suite 150
Huntington Beach, CA 92648
(714) 969-0800

Principal-In-Charge:

Thierry (Terry) R. Sanglerat, P.E., C.G.W.P.

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Project Manager:

Jack A. Caldwell, P.E.

Quality Assurance Manager is:

Bertrand Palmer, Ph.D., P.E.

Other GeoSyntec staff may be involved as is necessary and appropriate.

5.4 Testing Services

Testing will be done in terms of a subcontract by a qualified and licensed laboratory. The following laboratory or others (to be identified) may be utilized:

Calscience Environmental Laboratories, Inc.
7440 Lincoln Way
Garden Grove, CA 92841-1432
(714) 895-8494

5.5 Removal And Disposal Contractors

Removal and disposal may be done by one or more of the following subcontractors or others (to be identified) who will be retained by negotiated or competitive bids:

no
Facility
associated

Kern Environmental Services
P.O. Box 5337
Bakersfield, CA 93388
(805) 589-5220
USEPA #CAD982495608

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U.S. Filter Recovery Service
5215 South Boyle Avenue
Los Angeles, CA 90068
USEPA #CAD097030993

Chemical Waste Management, Inc.
35251 Old Skyline Road
Kettleman City, CA 93239
USEPA #CAT000646117

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6. FUTURE SITE USE

It is assumed that plating operations will resume at the Site. Section 4.0 provides information about the schedule for obtaining the permits to resume operations.

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7. PROJECT MANAGEMENT

7.1 Compliance with USEPA Order

The project will be managed in compliance with USEPA Order 98-09.

7.2 Reports and Submittals

Written weekly summary reports will be submitted to the USEPA. These reports will summarize the week's activities and those planned for the following week.

Documentation related to off-site disposal of waste will be submitted to USEPA in conjunction with the weekly reports.

7.3 Health and Safety

Work will be done in accordance with the project specific Health and Safety Plan.

7.4 Quality

Work will be done in accordance with the project specific Quality Assurance Project Plan.

7.5 Standard Operating Procedures & Specifications

Work will be done in accordance with GeoSyntec Standard Operating Procedures and/or Specifications as compiled on an as-needed basis. These will be provided to USEPA before initiation of the activity. Standard Operating Procedures for sampling materials in containers will be compiled after the initial Site reconnaissance.

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Laboratory testing will be done in accordance with industry standards and the procedures of the specific, selected laboratory. Copies will be provided to USEPA as required.

Removal will be done in accordance with specifications to be compiled by GeoSyntec and submitted to USEPA.

7.6 License and Permit Requirements

Permits and licenses will be obtained as required by Federal, State of California and local regulations.

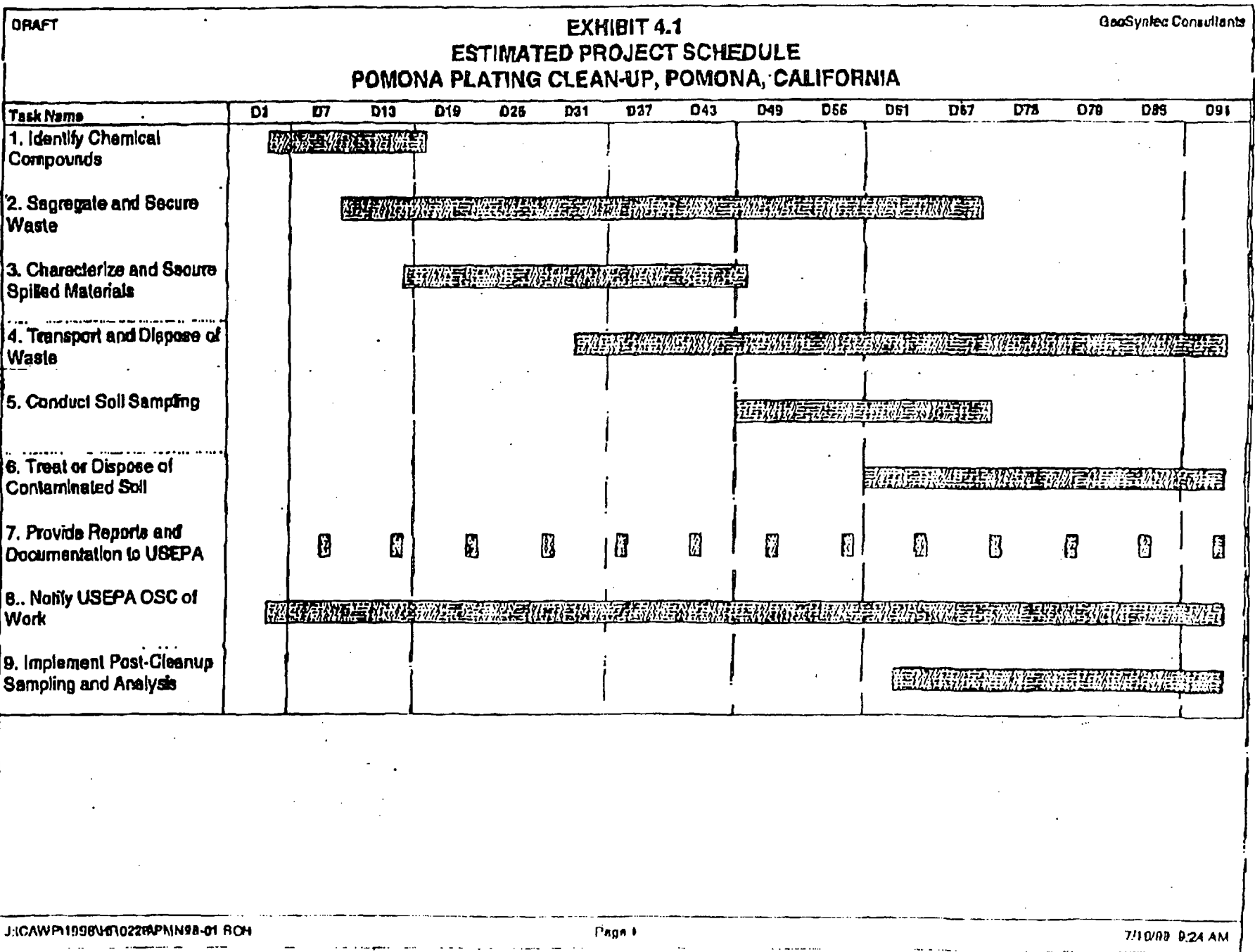
In the event that land disposal variances are necessary, GeoSyntec and McCutchen, Doyle, Brown and Enersen LLP will work cooperatively with the USEPA to obtain the variances.

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POMONA PLATING SITE POMONA, CALIFORNIA

QUALITY ASSURANCE PROJECT PLAN

**In Response to
EPA Unilateral Administrative Order 98-09**

Prepared for:

**Mr. David Distefano
572 Escalante Drive
Ivins, Utah 84738
(435) 628-0583**

Prepared by:

**GeoSyntec Consultants
2100 Main Street, Suite 150
Huntington Beach, California 92648
(714) 969-0800**



10 July 1998

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Table 1	Summary of Analytical Methods
Table 2	Sampling Methods and Procedures

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1. INTRODUCTION

This Quality Assurance Project Plan (QAPP) for the sampling and analysis of chemical waste and soil at the Pomona Plating Facility Site is designed to be implemented in conjunction with the Workplan, which is being submitted concurrently with this QAPP. The purpose of the QAPP is to outline specific quality assurance/quality control (QA/QC) procedures to ensure that waste characterization data collected for the project meet the data quality objectives and are of acceptable quality.

The QAPP provides a brief description of the project organization; outlines the field data objectives and the data quality objectives; describes the procedures for sampling and analysis quality control; describes procedures for data reduction, validation, and reporting; and presents requirements for corrective action and system and performance audits.

The U.S. Environmental Protection Agency (USEPA) issued Unilateral Administrative Order 98-09 (the Order), to Pomona Plating on 21 May 1998. The Order was issued following the results of the Site Assessment conducted by USEPA on 5 May 1998. This QAPP is being submitted in response to pertinent portions of Item VII.A.37 of the Order. This section of the Order requires the inclusion of a QAPP with the Work Plan that is consistent with the "Quality Assurance/Quality Control Guidance for Removal Activities: Sampling QA/QC Plan and Data Validation Procedures," USEPA OSWER Directive 9360.4-01, dated April 1990 (USEPA, 1990). Section 2 of the Workplan contains more specific project background information.

2. DATA USE OBJECTIVES

The primary objectives of the proposed field activities are: (i) to characterize unknown chemical wastes present at the site in order to screen waste management options; (ii) to provide data for implementation of waste management; (iii) to determine if surface and subsurface soils at the site have been contaminated with chemical waste; and (iv) to evaluate the post-cleanup condition of the site. These objectives will be met by performing the tasks outlined in Section 3 of the Workplan. Samples will be obtained from each of the following: unlabeled drums, vats, and other containers;

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spilled material encountered in water treatment and plating areas; and surface and subsurface (to a depth of 5 ft) soil sampling locations. The exact locations and number of samples will be determined after a site reconnaissance is performed.

3. DATA QUALITY ASSURANCE OBJECTIVES

Data quality is measured by the ability of the collected data to meet specific quantitative and qualitative objectives. Quantitative objectives include precision, accuracy, and completeness. Qualitative objectives include representativeness and comparability. The USEPA has established three levels of QA/QC objectives that may be used to meet the data quality objectives for a project: QA1, QA2, and QA3 [USEPA, 1990]. The QA characteristics and requirements for these objectives vary, but all three require that the data meet minimum requirements for completeness, representativeness, and comparability as defined by USEPA (1990).

The objective for the data obtained from this site will be to provide a quick, preliminary assessment of site contamination in order to meet the objective of completing the tasks outlined in the Workplan within 90 days. This type of objective is referred to as QA1, or a screening objective [USEPA, 1990], and is considered to be most appropriate for the proposed field activities because the data will be used for characterization and screening purposes only. The QA requirements for data obtained for objective QA1 are specified in Section 6.0 of this QAPP.

4. SAMPLE COLLECTION, QUALITY CONTROL AND CUSTODY PROCEDURES

Sections 3.2 and 3.6 of the Workplan outline the chemical waste and soil sampling and analysis procedures that will be implemented during the field sampling program. Details for these sampling procedures and the QA/QC procedures that apply to these field sampling activities are presented in this section of the QAPP. These activities have been designed in order to comply with the data use objectives presented in Section 2.0 of this QAPP.

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4.1 Sample Collection Procedures

Chemical wastes at the site will be investigated in liquid, sludge and solid media in order to categorize the hazardous wastes present at the site. The wastes will be analyzed for the parameters described in Section 3.2 of the Workplan using the methods described in Section 6.1 of this QAPP.

Liquid Chemical Wastes: Unknown liquid chemical wastes are currently stored in tanks and drums at the site. Prior to sampling, the pH of the liquid in each container will be measured and recorded in field logbooks and on the corresponding container label. Solutions that are determined to be pH-compatible may be mixed to obtain a composite sample in order to optimize the time and cost required for analyses.

The liquid in each container, or the composite liquid, will be sampled using a drum thief, a Teflon bailer, or other appropriate sampling equipment, and placed in the appropriate sample containers (Table 2). While collecting samples from drums and containers, the GeoSyntec Drum Handling Program, which is presented in the Health and Safety Plan (HASP), will be followed.

Sludges: Waste sludges will be sampled from one-ton waste bags that are currently stored at the site. These samples will be obtained from the surface of the sludge to a depth of 1 foot using stainless steel spoons. A sufficient number of samples will be collected from each bag to obtain a representative composite sample. The sludge samples will be placed in a stainless steel bowl, mixed, and split into the appropriate sample containers (Table 2).

Soils: Soil samples will be obtained at a limited number of locations in areas where surface and/or subsurface soil contamination is suspected. At each location, one surface and one subsurface soil sample (at a depth of up to 5 feet) will be obtained. Surface soil samples will be collected using stainless steel spoons. Subsurface soil samples will be obtained using hand augering techniques. Each sample will be placed in a stainless steel bowl, mixed, and split into the appropriate sample containers (Table 2).

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4.2 Equipment Decontamination Procedures

Sampling equipment will be decontaminated between samples by (in the following order): alconox and water wash, nitric acid rinse, tap water rinse, and distilled water rinse.

4.3 Disposal of Contaminated Materials

Excess waste samples will be emptied back into the original containers. Decontamination solutions, used personal protective equipment (PPE), and other contaminated materials will be stored in drums, labeled, and left on site for disposal at a later date pending analytical results. Non-hazardous waste trash will be placed in plastic trash bags for disposal at an appropriate licensed landfill.

4.4 Sample Handling and Custody Requirements

Samples will be stored in coolers with ice immediately after sampling. Breakable or otherwise fragile sample containers will be wrapped in plastic bubble-wrap to prevent damage during shipment. Chain-of-custody (COC) records will be maintained for each sample collected to provide an accurate written record of the possession and holding of samples from the time of collection through data analysis and reporting. The following information will be specified for each sample on the COC form: sample number; sample date; sample time; sample location and depth, if appropriate; preservative, if appropriate; analyses to be performed; and special instructions to the laboratory. The completed COC form will be sealed inside of the cooler.

Samples will be delivered to the laboratory within 48 hours of collection either by courier or an overnight shipping service. Upon receipt of samples by the laboratory, the laboratory will be responsible for maintaining internal COC of the samples.

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4.5 Analytical Methods Requirements

Samples collected for the investigation program will be analyzed by the methods specified in Table 1. Sample containers and sample preservation methods are summarized in Table 2 and are designed to comply with the relevant USEPA methods.

5. PROJECT ORGANIZATION AND RESPONSIBILITIES

GeoSyntec Consultants (GeoSyntec) is contracted by McCutchen, Doyle, Brown & Enersen LLP, on behalf of the site owner, to respond to the USEPA Order.

The GeoSyntec Project Manager (Mr. Jack Caldwell) has primary responsibility for project quality assurance. In addition, quality assurance during implementation of the field sampling program will be directed by the Site Characterization Task Leader. The Project QA/QC Officer (Bert Palmer) will be responsible for conducting a QA/QC review as described in this QAPP. GeoSyntec's Huntington Beach Environmental Health and Safety Coordinator (Brian Hendron) will be responsible for overseeing health and safety matters on the project. The Project Manager will evaluate and implement any necessary corrective action regarding data quality issues.

6. QUALITY ASSURANCE/QUALITY CONTROL REQUIREMENTS

Quality control of laboratory analysis is ensured by (i) performing analytical methods according to prescribed protocols and (ii) analyzing laboratory QA/QC samples to measure precision and accuracy of laboratory methods and equipment, instrument calibration, and preventive maintenance. These procedures are described below.

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6.1 Analytical Methods

Laboratory analyses for each parameter will be performed in accordance with prescribed USEPA protocols established in the USEPA document "Test Methods for Evaluating Solid Waste, SW-846, Update III," dated June 1997. The analytical methods that will be used for this project are shown in Table I. Analyses will be performed in accordance with these procedures unless project requirements necessitate the modification of these methods or the adoption of alternative methods. If an alternative method is used, it will be documented and reported.

6.2 Laboratory Quality Assurance/Quality Control Samples

Laboratory QA/QC samples that will be analyzed during the proposed investigation include method blanks, laboratory duplicates, matrix spikes, matrix spike duplicates, surrogates, and reagent blanks. The description and purpose of these samples is discussed in USEPA (1990).

6.3 Field Quality Assurance/Quality Control Samples

Field QA/QC samples that will be collected during the proposed investigation include field duplicate samples and equipment blanks. The description and purpose of these samples is discussed below.

- Field Duplicate Samples. Field duplicate samples are collected at the same time, from the same location, and in the same manner as a field sample. One field duplicate soil sample will be collected to assess the representativeness of the data.
- Equipment Blanks. Equipment blanks are obtained by filling decontaminated sampling equipment with reagent-grade deionized water, sampling this water, and submitting the sample for analysis. One equipment blank sample will be collected and analyzed to assess potential contamination from the sampling equipment.

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7. EQUIPMENT MAINTENANCE AND CALIBRATION

Both field and laboratory equipment involved with the collection and analysis of the samples will be maintained and calibrated to the requirements specified below.

7.1 Laboratory Preventative Maintenance

The analytical laboratory will maintain an adequate supply of critical equipment and analysis items to prevent loss of data due to equipment malfunction. These include, but are not limited to, calibration standards, reagents, glassware, and analytical equipment.

7.2 Laboratory Instrument Calibration

Instruments are calibrated with standard solutions appropriate for the analytical or test method to be performed. Laboratory equipment will be calibrated by laboratory personnel according to the manufacturer's directions, and the requirements of the prescribed analytical methods. Calibration procedures and frequency of calibration will be recorded in appropriate logbooks. Initial and continuing instrument calibrations will meet the criteria outlined in USEPA (1990).

7.3 Field Equipment Preventative Maintenance

Sample collection equipment will be examined, tested, and decontaminated prior to use. Sampling personnel will maintain a supply of key equipment items in the field to prevent loss of data due to equipment malfunction. These include, but are not limited to, tubing, fittings, sample containers, calibration standards, tools, and cleaning equipment.

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7.4 Field Instrument Calibration

Field instruments will be calibrated with standard solutions or gases appropriate for the analytical or test method to be performed. Instrument manufacturer recommendations, established analytical procedures, and in some cases, contract specifications, are all utilized in formulating the guidelines for calibration frequency and the concentration of the calibration standards. Calibration data will be recorded in the field logbook for the project.

8. DATA MANAGEMENT AND DELIVERABLES

This section deals with the generation of both laboratory and field data and the protocol for the recording, managing, and reporting this information.

8.1 Laboratory Data

All laboratory analytical data will be reported on data sheets that include laboratory and field sample designations, sample date, date of sample arrival at the laboratory, date of extraction (if any), date of analysis, and method of analysis. The Laboratory QA/QC Officer or designate will review each data sheet, sign and date it, and send it to the GeoSyntec Project Manager.

Data validation will be performed by GeoSyntec personnel as described in Section 12.0 of this QAPP. The results of the data validation will be included with laboratory data sheets when data are reported.

8.2 Field Data

Field logbooks will be used to document data collection activities, including a description of the sample, its origin, sampling time, date, and personnel. Entries will include sufficient detail to potentially reproduce sampling activities. Logbook entries

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shall be made in indelible ink, with each page initialed and dated by the sampler. Field logbooks will be stored in the project file when not in use.

9. SYSTEM AND PERFORMANCE AUDITS

Internal audits are performed to review and evaluate the adequacy of the QAPP and to ascertain that it has been completely and uniformly implemented.

A systems audit includes an evaluation of field and laboratory QA/QC procedures by the Laboratory QA/QC Officer and the GeoSyntec Project QA/QC Officer. If the systems audit shows a significant discrepancy from the Workplan or the QAPP, the responsible party will remedy the situation before work continues. Each major system change requires a written summary to the GeoSyntec Project QA/QC Officer to document the change made.

A performance audit includes a careful evaluation of field, laboratory, and data documentation and management procedures to determine the accuracy of the total measurement system(s) or a component of the system. Upon discovery of any significant deviation from the QAPP, the Project Manager will be informed of the nature, extent, and corrective action taken to remedy the deviation. Any changes must be noted and submitted in a written report to the Project Manager.

10. CORRECTIVE ACTION

Sample results that do not meet data quality objectives will be reviewed by the GeoSyntec Project QA/QC Officer and the Laboratory QA/QC Officer. Raw analytical data, laboratory notebooks, or other laboratory data may be obtained and examined as necessary. Identified problems will be corrected prior to reanalysis. If necessary, a resampling in the field may be performed. The GeoSyntec Project QA/QC Officer will review all corrective actions to ensure that resolution was achieved.

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11. REPORTS TO MANAGEMENT

The GeoSyntec Project QA/QC Officer will document and report the QA/QC results and identified issues to the GeoSyntec Project Manager. The GeoSyntec Project Manager will provide the QA/QC results to McCutchen, Doyle, Brown & Enersen LLP and identify QA/QC issues and provide recommended solutions.

12. DATA VALIDATION

In accordance with USEPA requirements for validation of QA data [USEPA, 1990], data validation will comprise review of holding times, blank analyses, detection limits, and data completeness. These items are discussed below:

- Holding Times. Each analytical method has an associated prescribed holding time, which is the maximum amount of time after collection that a sample may be held prior to extraction and/or analysis. Sample integrity becomes questionable for samples extracted and/or analyzed beyond holding times due to potential physical and/or chemical changes to the sample. Analytical reports will be reviewed to verify that analytical method holding times were met.
- Blanks. Method blank and equipment blank samples will be analyzed to check for potential sample contamination during this project. Analytical reports will be reviewed to identify whether blank contamination occurred.
- Detection Limits. Detection limits for target analytes can be elevated if an inadequate volume of sample is collected or if dilution is necessary either to counter matrix interference or to bring target analyte concentrations to within calibration linear range. Results reported as below elevated detection limits must be noted and interpreted with care.

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- Data Completeness: The completeness goal for this project is 90 percent. If this goal is not achieved, the rationale for the incomplete data will be assessed and reported.

13. REFERENCES

USEPA (1990), "Quality Assurance/Quality Control Guidance for Removal Activities: Sampling QA/QC Plan and Data Validation Procedures," USEPA OSWER Directive 9360.4-01.

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TABLE 1

SUMMARY OF ANALYTICAL METHODS
POMONA PLATING
POMONA, CALIFORNIA

ANALYTE	MATRIX	METHOD	EXTRACTION METHOD
Metals ^a	Liquid Waste Sludge Soil	SW-846 6010A	SW-846 3005A (water) SW-846 3050A (solids)
TCLP Metals ^a	Sludge Soil	SW-846 6010A	SW-846 1311
Cyanide	Liquid Waste	EPA 335.2	NA
Chloride	Liquid Waste	EPA 325.2	NA
Sulfate	Liquid Waste	EPA 300.0A	NA
Nitrate	Liquid Waste	EPA 300.0A	NA
pH	Liquid Waste	EPA 150.1	NA
Acidity	Liquid Waste	EPA 305.1	NA

^a This method can be used to analyze: antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium and zinc.

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TABLE 2

**SAMPLING METHODS AND PROCEDURES
POMONA PLATING
POMONA, CALIFORNIA**

SAMPLE MATRIX	ANALYTICAL PARAMETER	ANALYTICAL METHOD	PRESERVATION METHOD	SAMPLE CONTAINER
Sludge, Soil	Metals	SW-846 6010A	4°C	Glass jar with Teflon-lined lid
Water, Liquid Waste	Metals	SW-846 6010A	HNO ₃ to pH<2, 4°C	1 L polycethylene
Water, Liquid Waste	Cyanide	EPA 335.2	NaOH to pH≥12, 4°C	1 L plastic or glass with Teflon-lined lid
Water, Liquid Waste	Chloride	EPA 325.2	4°C	1 L plastic or glass with Teflon-lined lid
Water, Liquid Waste	Sulfate	EPA 300.0A	4°C	1 L plastic or glass with Teflon-lined lid
Water, Liquid Waste	Nitrate	EPA 300.0A	4°C	1 L glass with Teflon-lined lid
Water, Liquid Waste	pH	EPA 150.1	NA	1 L plastic or glass with Teflon-lined lid
Water, Liquid Waste	Acidity	EPA 305.1	4°C	1 L plastic or glass with Teflon-lined lid

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POMONA PLATING SITE POMONA, CALIFORNIA

HEALTH AND SAFETY PLAN In Response to EPA Unilateral Administrative Order 98-09

Prepared for:

**Mr. David DiStefano
572 Escalante Drive
Ivins, Utah 84738
(435) 628-0583**

Prepared by:

**GeoSyntec Consultants
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Huntington Beach, California 92648
(714) 969-0800**



10 July 1998

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Project Health and Safety Plan (HASP)

Project Name: Pomona Plating Site

Project Number: HR0228-01

This HASP, which must be kept on site, addresses the safety and health hazards of each phase of site operation, including the requirements and procedures for worker protection. Subcontractors must develop their HASP that is at least as stringent as this HASP.

Only the Site Health and Safety Officer (SHSO) can change or amend this document in agreement with the Environmental Health and Safety Coordinator (EHSC), Project Manager, and Principal-in-Charge. The SHSO must initial any change made to the HASP at the relevant section. Major amendments (e.g., changes in personal protective equipment not provided for in this plan, addition of tasks, etc.) must be documented by indicating the amendment date shown on this page. Amendments will be provided to the EPA with the weekly memorandums.

Prepared by: Karen E. Schmitt for Sherry Hall 7/10/98
for Industrial Hygienist Date

Reviewed by: A. Culivell for Jack Peng 7/10/98
Director of Environment, Health, and Safety Date

Approved by: A. Culivell 7/10/98
Project Manager Date

[Signature] 7/10/98
Principal-in-Charge Date

Copy to: Jack C. Peng, Ph.D., CTH
Director of Environment, Health, and Safety

Brief Description of Amendment	Amendment Date
_____	_____
_____	_____
_____	_____

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All site workers must read this HASP. A pre-entry briefing conducted by the SHSO must be held prior to initiating this project. All sections of this HASP must be reviewed during this briefing. Any worker not in attendance at the initial meeting must be trained by the SHSO on the information covered in the pre-entry briefing meeting. *Tailgate meetings must be held at the beginning of the work shift by the SHSO to discuss important safety and health issues concerning tasks performed on that day. A brief description of topics discussed in tailgate meetings must be documented in the Field Logbook.* After reading the HASP and attending a pre-entry briefing, workers must sign the following acknowledgment statement.

I have read, understand, and agree with the information set forth in this HASP. I have also attended a pre-entry briefing. I agree to perform my work in accordance with this HASP.

Name	Date	Name	Date
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
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FIGURE 1: Directions to Pomona Valley Hospital/Medical Center

TABLE 1:	Key Personnel and Health & Safety Responsibilities
TABLE 2:	Training/Medical Surveillance/Respiratory Protection Records
TABLE 3:	General Safe Work Practices
TABLE 4:	Contaminants of Concern
TABLE 5:	Hazard Analysis
TABLE 6:	Emergency Contacts
TABLE 7:	Emergency Procedures

APPENDIX A:	Weekly Health & Safety Inspection Checklist
APPENDIX B:	Contaminant Fact Sheets
APPENDIX C:	Hazard Mitigators
APPENDIX D:	Air Monitoring Equipment, Frequency of Readings, and Action Guidelines Per Task
APPENDIX E:	Personal Protective Equipment Per Task
APPENDIX F:	Decontamination Procedures & Equipment
APPENDIX G:	Material Safety Data Sheets

FOR INTERNAL USE ONLY:

Superfund

- ☐ Industrial Site
☐ Landfill

RCRA Corrective Action

- ☒ Industrial Site
☐ Landfill
☐ Municipal Landfill
☐ Other

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1. SITE/TASK DESCRIPTION

Brief description of site (including information as to current and previous site usage, location and approximate size of site, and a description of the tasks):

- Site Usage: Former electroplating facility
- Site Location: 720 Indigo Court, Pomona, California
- Size of Site: Storage Area: 5,000 ft², Building: 10,000 ft²
- Expected Field Dates: 13 July 1998 - 15 November 1998
(Beginning date - ending date)
- Tasks (described in detail in the Work Plan) for this project include:
 - ① Identification of Chemicals
 - ② Segregation of Chemicals
 - ③ Securing Spilled Wastes
 - ④ Transportation and Disposal
 - ⑤ Surface and Subsurface Sampling
 - ⑥ Soil Treatment or Disposal
 - ⑦ Post Cleanup Sampling and Analysis
- Description of Surrounding Property/Population:

North	<u>Santa Fe Railroad tracks</u>	East	<u>Mixed Commercial</u>
South	<u>Residential</u>	West	<u>Residential</u>

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2. KEY PERSONNEL AND HEALTH AND SAFETY RESPONSIBILITIES

Table 1 lists project personnel and their responsibilities in regard to health and safety concerns on this project.

3. WORKER TRAINING

Table 2 documents that workers have received the appropriate training requirements. A pre-entry briefing and daily tailgate meetings are also conducted to facilitate on-site training.

4. MEDICAL SURVEILLANCE ☒ Applicable ☐ Not Applicable

Table 2 indicates the workers who participate in the company Medical Surveillance Program.

☐ Yes ☒ No Additional site-specific medical surveillance is required for the following contaminants of concern:

5. SITE CONTROL

Site control procedures must be implemented before the start of site tasks to control worker exposures to hazardous substances

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5.1 Site Map

A site map will be prepared as part of Task 1. A location map showing the route to nearest hospital is provided in Figure 1.

5.2 Buddy System

The Buddy System is required during all work performed in the Exclusion Zone. The Buddy System includes maintaining two-way radio contact with GeoSyntec personnel, and/or visual contact with other GeoSyntec, client, or other subcontractor personnel.

5.3 Work Zones

☒ Applicable

☐ Not Applicable

Three work zones must be established for each task. The Exclusion Zone is defined as the area on-site where contamination is suspected and tasks are to be performed. The Contamination Reduction Zone (CRZ) is defined as the area where equipment and workers are to be decontaminated. The Support Zone is defined as the command area and serves as a storage area for supplies. The exact location and extent of the work zones will be modified as necessary as site investigation information becomes available. The boundaries of the Exclusion Zone, CRZ, and Support Zone must be marked using the following methods:

☒ Warning tape

☒ Traffic cones

☒ Signs

☒ Fence

☐ Other _____

5.4 Site Access

Access to the site must be controlled using the following method:

☒ Sign in/Sign out log

☐ Guard

☐ Identification badges

☐ Other: _____

5.5 Visitors

Visitors to the site must be continually escorted in order to assure their safety since they may be unfamiliar with the site. Visitors must not be allowed past the Support Zone unless they read, understand, sign, and meet the requirements outlined in this HASP.

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5.6 Communications

On-site communications must be conducted through the use of:

- | | |
|---|---------------------------------------|
| <input checked="" type="checkbox"/> Verbal | <input type="checkbox"/> Horn |
| <input checked="" type="checkbox"/> Two-way radio | <input type="checkbox"/> Siren |
| <input type="checkbox"/> Cellular telephone | <input type="checkbox"/> Other: _____ |
| <input checked="" type="checkbox"/> Hand signals | |

Off-site communications must be conducted through the use of:

- | |
|--|
| <input checked="" type="checkbox"/> Cellular telephone |
| <input type="checkbox"/> Pay phone: Location _____ |
| <input type="checkbox"/> Other: _____ |

5.7 Safe Work Practices

General Safe Work Practices that must be implemented during work activities at this site are included in Table 3.

5.8 Inspections

For projects lasting longer than one week, the SHSO must conduct weekly health and safety inspections. The inspections must be documented using the Weekly Health & Safety Inspection checklist included in Appendix A. The Weekly Health & Safety Inspection Checklist must be kept on file at the project site.

6. HAZARD ANALYSIS AND MITIGATORS

Site specific hazards must be identified (through hazard analysis) to determine the appropriate safety and health hazard mitigators needed to protect workers from the identified hazards. Hazard analysis involves a complete review of chemical, physical, and biological hazards.

6.1 Chemical Hazards

☒ Applicable ☐ Not Applicable

Based on previous field analysis conducted at the site, the contaminants of concern include but are not limited to chromic acid, chromium, copper, hydrochloric acid, nickel, nitric acid and polychlorinated biphenyls. If based on the results of the general site reconnaissance, contents of containers are unidentifiable based on labels, markings, etc., the contents will be considered "unknown" and will be handled accordingly.

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Contaminant Fact Sheets for each of the known contaminants of concern are provided in Appendix B. If other chemicals are identified during the execution of any task, further hazard analysis will be performed and associated Contaminant Fact Sheets will be added.

Information from the Contaminant Fact Sheets (e.g., flash point, water reactive, etc.) have been utilized in performing the chemical hazard analysis in Table 5 (e.g., fire, inhalation, reactivity, and skin absorption hazards). If, based on the hazard analysis, chemical hazards exist, hazard mitigators must be utilized to control these hazards (Appendix C). In addition, air monitoring equipment (Section 7) and personal protective equipment (Section 8) must also be utilized to evaluate airborne concentrations and protect workers.

6.2 Physical Hazards

☒ Applicable ☐ Not Applicable

Physical hazards associated with tasks to be performed (e.g., electrocution due to drilling, etc.) and site location (e.g., slips, trip, or falls due to rocky terrain, etc.) have been analyzed in Table 5. If, based on the hazard analysis, physical hazards exist, hazard mitigators (Appendix C) must be implemented.

6.3 Biological Hazards

☒ Applicable ☐ Not Applicable

If, based on the hazard analysis (Table 5), biological hazards exist associated with tasks to be performed and site location (e.g., allergic reactions to poisonous plants or insects indigenous to the area, etc.), hazard mitigators (Appendix C) must be implemented.

7. AIR MONITORING

7.1 Real-Time Air Monitoring

☒ Applicable ☐ Not Applicable

Air monitoring may be performed, as determined on site by the SHSO, during each task when activities are conducted that pose a potential inhalation hazard. For example, during Task 1 - Identification of Chemicals, air monitoring will not be performed during the site reconnaissance, but will be performed during characterization of the chemicals on site. As specific activities are further defined per task, this HASP will be amended to specify air monitoring requirements for each activity.

Frequency of air monitoring readings will be adjusted on site accordingly, with the consent of the SHSO. Equipment must be calibrated at least before work begins each

per
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site must be
screened prior
to any new
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day and at the end of the day. Air monitoring readings and calibration records must be documented in the Field Logbook.

7.2 Personal/Area Air Monitoring ☐ Applicable ☒ Not Applicable

Personal/area air monitoring is required for the following contaminants of concern:

8. PERSONAL PROTECTIVE EQUIPMENT

☒ Applicable ☐ Not Applicable

The general levels of personal protection that may be required for each task are provided in Appendix E. These levels of protection may be upgraded or downgraded (by the SHSO) depending on the air monitoring action guidelines provided in Appendix E and actual activities being performed during the execution of each task. As specific activities are further defined per task, this HASP will be amended to specify specific personal protection requirements for each activity. PPE levels must be indicated in the Field Logbook.

If respirators are worn, workers must adhere to the company's Respiratory Protection Program (29 CFR §1910.134). Table 2 provides a record of the site workers' last annual fit test. Beards (i.e., facial hair interfering with the respirator seal) are not allowed.

9. DECONTAMINATION

☒ Applicable ☐ Not Applicable

PPE must be decontaminated as per 29 CFR §1910.120(k). The decontamination procedures, equipment and decontamination solution required for each task are provided in Appendix F. In an emergency, the primary concern is to prevent the loss of life or severe injury to site personnel. If immediate medical treatment is required to save a life, decontamination should be delayed until the victim is stabilized. If decontamination can be performed without interfering with essential life-saving measures or first aid, or if worker has been contaminated with an extremely toxic or corrosive material that could cause severe injury or loss of life, decontamination must be performed in coordination with or prior to initial medical treatment at the scene.

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10. EMERGENCY RESPONSE

A list of contacts local off-site emergency responders, including telephone numbers, is provided in Table 5. The nature of the site work and contaminants of concern should be reviewed with the off-site responders before work begins on this project. The following emergency response equipment is required for this project:

- ☒ Fire Extinguisher: ☐ Type A ☐ Type B ☐ Type C ☒ Type ABC
- ☒ Eyewash (Note: 15 minutes of free-flowing fresh water)
- ☒ SCBA
- ☒ First Aid Kit
- ☒ Shower (Note: for acids and caustics)
- ☐ Other: _____

The emergency response communication system for the site is:

- ☒ Verbal
- ☐ Two-way radio
- ☒ Hand signals:
 - Hand gripping throat = "Out of Air, Can't Breathe"
 - Grip partner's wrist or both hands around waist = "Leave area immediately"
 - Hands on top of head = "Need assistance"
 - Thumps up = "OK; I am all right; I understand"
 - Thumps down = "No; negative"
- ☐ Horn
- ☐ Siren
- ☐ Other: _____

In the event that an on-site emergency develops, the procedures delineated in Table 6 are to be followed immediately.

11. CONFINED SPACE ENTRY ☐ Applicable ☒ Not Applicable

If applicable, workers must adhere to the company's Confined Space Entry Program [29 CFR §1910.120(j)].

12. SPILL CONTAINMENT ☒ Applicable ☐ Not Applicable

If applicable, workers must adhere to the hazard mitigators for drum handling in Appendix C.

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13. HAZARD COMMUNICATION ☒ Applicable ☐ Not Applicable

The following procedures must be followed for all chemicals brought on site (i.e., decontamination solution, sampling preservatives, gasoline, etc.):

- Labels on incoming primary chemical containers must not be defaced.
- Chemical containers must be stored in appropriate storage cabinets.
- Secondary containers and storage cabinets must be correctly and clearly labeled using the Hazardous Materials Identification System (HMIS).
- Incompatible chemicals must not be stored together.
- Workers have received training on the hazards of these chemicals as they apply to each task as indicated in Table 2.
- A Material Safety Data Sheet (MSDS) for each chemical must be included in Appendix G.

When chemicals are used on site, workers must adhere to the company's Hazard Communication Program (29 CFR §1910.1200).

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EXITING THE SITE:

Right on North Towne Avenue

Right on Arrow Highway

Left on North Garey Avenue

Approximately
one mile later,
the hospital is on
your left side.

Pomona Valley Hospital
1798 North Garey Avenue
Pomona, California 91767
(909) 865-9500



**GEOSYNTEC
CONSULTANTS**

DIRECTIONS TO
POMONA VALLEY HOSPITAL/MEDICAL CENTER

FIGURE NO. 1

DATE: 10 JUL 1998

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TOTAL P.15

Volume II
Attachment C
Geosyntec Revised Site Workplan

**POMONA PLATING SITE
POMONA, CALIFORNIA**

**WORKPLAN
QUALITY ASSURANCE PROJECT PLAN
AND HEALTH AND SAFETY PLAN**

**In Response to
EPA Unilateral Administrative Order 98-09**

Prepared for:

**Mr. David Distefano
572 Escalante Drive
Ivins, Utah 84738
(435) 628-0583**

Prepared by:

**GeoSyntec Consultants
2100 Main Street, Suite 150
Huntington Beach, California 92648
(714) 969-0800**



10 July 1998

**POMONA PLATING SITE
POMONA, CALIFORNIA**

**WORKPLAN
In Response to
EPA Unilateral Administrative Order 98-09**

Prepared for:

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10 July 1998

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1. INTRODUCTION

1.1 General

This Workplan responds to the U.S. Environmental Protection Agency (USEPA) Unilateral Administrative Order 98-09 (the Order) for the Pomona Plating Site, located at 720 Indigo Court, Pomona, California (the Site).

This Workplan is prepared by GeoSyntec Consultants, Inc. (GeoSyntec) for Mr. David Distefano, owner of the site, for submittal to the USEPA and for implementation subsequent to USEPA approval.

1.2 Purpose and Objectives

The work described in this Workplan will achieve the following objectives:

- Respond to and implement the requirements of the Order;
- Remove from site and appropriately dispose of materials and other objects that constitute a threat to public health or welfare or the environment based upon a consideration of the factors set forth in National Contingency Plan at 40 C.F.R. § 300.415(b).
- Prepare the Site and facilities for future use (to be established as part of the work done in terms of this Workplan).

2. SITE DESCRIPTION

The Pomona Plating Site is in an area generally zoned for light industrial/commercial use. The Site shares a common property line with a residential neighborhood to the west. The boundaries of the Site are generally Towne Street to the east, Yorkshire Street to the west, the Santa Fe railroad tracks to the north, and Arrow Street to the south.

The Site includes an approximately 10,000 square feet (930 m²) structure, an outside storage area adjacent to the Santa Fe railroad tracks, and a large asphalt parking lot. An active automotive accessories fabrication facility is located in the same complex, approximately 15 feet (4.6 m) to the east of the Site. A chain link fence with a locking gate surrounds the property of both the Site and the adjacent business. The southern half of the structure's interior space was used as a polishing room, office area, and general storage area. The northern portion of the structure housed the main plating line, the water treatment system, a small laboratory, and a chemical storage area. Portions of the building that have been damaged by fire have been repaired or are in the process of being repaired.

There are approximately 36,000 lbs. (16,363 kg) of filter cake stored in bags on the floor inside the building and 22,000 gallons (5,812 liters) of liquid chemicals stored in drums and vats outside the building. The plating line vats and treatment system inside the structure contain approximately 17,000 gallons (4,491 liters) of liquid waste. Approximately 3,600 gallons (952 liters) of liquid waste and 440 lbs. (200 kg) of solid waste are stored in drums located randomly throughout the interior of the facility, in addition to an unquantified amount of sludge that has accumulated on the floors in the plating and treatment area. The types of waste and chemicals at the Site include, but may not be limited to, nitric acid, hydrochloric acid, chromic acid, chromium, copper, and nickel.

3. WORK TASKS

3.1 General

The tasks to be accomplished have been identified by the USEPA in the Order, Section 36(a) - (i). The following subsections describe the specific actions to be performed as parts of each task.

3.2 Identify Chemicals Compounds

The first task specified in the Order is "*identifying all chemical compounds in all vats and other containers, including sampling and analyzing all unknown chemicals and all chemicals in containers without labels or with unreadable labels.*" GeoSyntec will undertake the following tasks as appropriate to identify the chemicals:

- perform a Site reconnaissance and compile a sketch map showing the relative location of facilities, containers, and other materials (collectively referred hereafter as materials);
- prepare an inventory of materials at the site;
- prepare a sampling matrix and plan including a list of materials and locations that will be characterized (i.e., containers with clearly marked and intact labels shall not be sampled for characterizations);
- categorize unidentified materials and containers using the following tests, as necessary:
 - pH;
 - Acid strength (acids only);
 - Total chloride, sulfates, and nitrates;
 - RCRA metals in solids, liquids and sludges;
 - TCLP for metals in sludges and solids; and
 - Cyanide; and

- label containers with a unique identification (ID) number.

3.3 Segregate and Secure Waste

The second task specified in the Order is "*Segregating and securing containers of chemical waste in groups according to compatibility of the chemical contents.*" GeoSyntec, with support from a qualified and licensed removal contractor as specified in Section 5.5, will undertake the following tasks as appropriate to segregate the chemicals:

- Interpret the test results from Task 1: Identify Chemical Compounds;
- Categorize chemicals based on chemical properties and potential disposal options (e.g., segregate on property, dispose to wastewater drain, Subtitle C or D landfill, or pre-treat and dispose);
- Secure the premises:
- Secure the vessels (e.g., cover, check placement compatibility, provide secondary containers or overpacks);
- Sweep floors clean and collect miscellaneous trash for disposal; and
- Separate wastes into disposal categories, if practical and safe.

3.4 Characterize and Secure Spilled Materials

The third task specified in the Order is "*Characterizing, containerizing, and securing all of the spilled material encountered in the water treatment and plating areas.*" GeoSyntec and licensed contractors will undertake the following tasks as appropriate to secure spilled wastes:

- characterize spilled materials located in the water treatment and plating areas using methods enumerated in Section 3.2;
- pump, absorb or otherwise transfer spilled material into appropriate containers;
- label containers with a unique ID number; and
- eliminate emptied vessel from inventory list created as part of Task 1: Identify Chemical Compounds.

3.5 Transport and Dispose of Waste

The fourth task specified in the Order is "*Transporting and disposing of, in accordance with all applicable or appropriate and relevant federal and state laws, all waste hazardous substances on Site.*" GeoSyntec and licensed contractors will perform the following as appropriate to accomplish the transportation and disposal of wastes:

- identify usable chemical products for reuse or disposal;
- remove and dispose of waste materials as appropriate in accordance with relevant and appropriate regulations at licensed disposal facilities; this will involve a subcontract with a qualified and licensed subcontractor; or
- store any usable chemical products for future use in the event that plating operations are to be resumed, or sell the materials for processing or further commercial use.

3.6 Conduct Soil Sampling

The fifth task specified in the Order is "*Conducting surface and subsurface soil sampling to determine the full nature and extent of soil contamination.*" GeoSyntec and licensed contractors will undertake the following specific tasks as appropriate during surface and subsurface sampling:

- establish locations of sampling points on the basis of the Site reconnaissance, the inventory, and the characteristics of the materials;
- remove or core through the concrete, when necessary, and sample the upper three feet of the soil (i.e., 0 to 1 ft, 2 to 3 ft). probably with a hand auger;
- analyze soil and concrete chip surface samples for chemical contamination, based on the characteristics of the materials on or in containers above the specific sample location; and
- perform additional delineation sampling as warranted from the results of the first phase of sampling and analysis.

3.7 Treat or Dispose of Contaminated Soil

The sixth task specified in the Order is "*Disposing, stabilizing, or treating grossly contaminated soils found at or near the surface at the direction of the OSC.*" GeoSyntec and qualified contractors will perform the following tasks during treatment and/or disposal of the soil, as appropriate:

- develop extent of contamination maps and removal plans for affected soils;
- categorize the subsurface based on level and type of contamination and determine appropriate treatment or disposal; and

- work with a qualified and licensed contractor to excavate, treat, haul and dispose of the wastes in accordance with all applicable regulations.

3.8 Provide Reports and Documentation to USEPA

The seventh task specified in the Order is "*Providing EPA with copies of all documentation related to off-Site disposal of wastes including, but not limited to, manifests, waste profiles and analytical data and disposal costs.*" GeoSyntec will perform the following tasks:

- submit a memorandum to the On Site Coordinator on a weekly basis summarizing the progress of that week and addressing the plans for the following week; and
- submit copies of disposal documentation upon completion of the project.

3.9 Notify USEPA OSC of Work

The eighth task specified in the Order is "*Notifying the EPA On-Scene Coordinator at least forty-eight (48) hours prior to any on-Site work. Notifying the EPA On-Scene coordinator at least 72 hours prior to disposal of wastes.*" GeoSyntec will do the following:

- maintain on-going communication each day through brief daily field meetings between the GeoSyntec representative and the OSC; and
- provide all notifications as required by the USEPA.

3.10 Implement Post-Cleanup Sampling and Analyses

The ninth task specified in the Order is "*Providing and implementing a post-cleanup sampling and analysis plan.*" GeoSyntec will perform the following tasks as necessary:

- prepare a post-cleanup sampling plan, identifying specific areas to be sampled (e.g., wipe samples, concrete samples, wooden samples, additional soil samples); the plan will be prepared immediately following the development of removal plans described under Task 6: Treat or Dispose of Contaminated Material;
- collect and analyze the samples as the removal proceeds;
- interpret the sampling results and direct additional removal as warranted; and
- provide a final removal action close-out report to the USEPA.

4. SCHEDULE

The proposed schedule for executing the work is shown in Exhibit 4.1. The precise duration of activities may vary depending on the results of the sampling and characterization.

The specifics of task execution will depend on the following:

- the Site inventory, (i.e., the listing of containers, their contents, and materials);
- sampling and testing results; and
- the proposed end-use of the Site (see Section 6)

Work will start within seven days of EPA approval of this Workplan or July 27, 1998, whichever is later.

On completion of the work shown on Exhibit 4.1, work to obtain permits to resume plating operations will begin. This is anticipated to take about 60 days.

5. IDENTIFICATION OF INVOLVED PARTIES

5.1 Site Owner

The site is owned by and work will be done for:

David Distefano
572 Escalante Drive
Ivins, UT 84738

5.2 Site Agent

Work at the site is overseen by the owner's Los Angeles counsel:

Colleen P. Doyle, Esq.
McCutchen, Doyle, Brown & Enersen LLP
355 South Grand Avenue, Suite 4400
Los Angeles, CA 90071-1560
(213) 680-6446

5.3 Consultant

The owner's consultant is:

GeoSyntec Consultants
2100 Main Street, Suite 150
Huntington Beach, CA 92648
(714) 969-0800

Principal-In-Charge:

Thierry (Terry) R. Sanglerat, P.E., C.G.W.P.

Project Manager:

Jack A. Caldwell, P.E.

Quality Assurance Manager is:

Bertrand Palmer, Ph.D., P.E.

Other GeoSyntec staff may be involved as is necessary and appropriate.

5.4 Testing Services

Testing will be done in terms of a subcontract by a qualified and licensed laboratory. The following laboratory or others (to be identified) may be utilized:

Calscience Environmental Laboratories, Inc.
7440 Lincoln Way
Garden Grove, CA 92841-1432
(714) 895-8494

5.5 Removal And Disposal Contractors

Removal and disposal may be done by one or more of the following subcontractors or others (to be identified) who will be retained by negotiated or competitive bids:

Kern Environmental Services
P.O. Box 5337
Bakersfield, CA 93388
(805) 589-5220
USEPA #CAD982495608

GeoSyntec Consultants

U.S. Filter Recovery Service
5215 South Boyle Avenue
Los Angeles, CA 90068
USEPA #CAD097030993

213-277-1450

Chemical Waste Management, Inc.
35251 Old Skyline Road
Kettleman City, CA 93239
USEPA #CAT000646117

6. FUTURE SITE USE

It is assumed that plating operations will resume at the Site. Section 4.0 provides information about the schedule for obtaining the permits to resume operations.

7. PROJECT MANAGEMENT

7.1 Compliance with USEPA Order

The project will be managed in compliance with USEPA Order 98-09.

7.2 Reports and Submittals

Written weekly summary reports will be submitted to the USEPA. These reports will summarize the week's activities and those planned for the following week.

Documentation related to off-site disposal of waste will be submitted to USEPA in conjunction with the weekly reports.

7.3 Health and Safety

Work will be done in accordance with the project specific Health and Safety Plan.

7.4 Quality

Work will be done in accordance with the project specific Quality Assurance Project Plan.

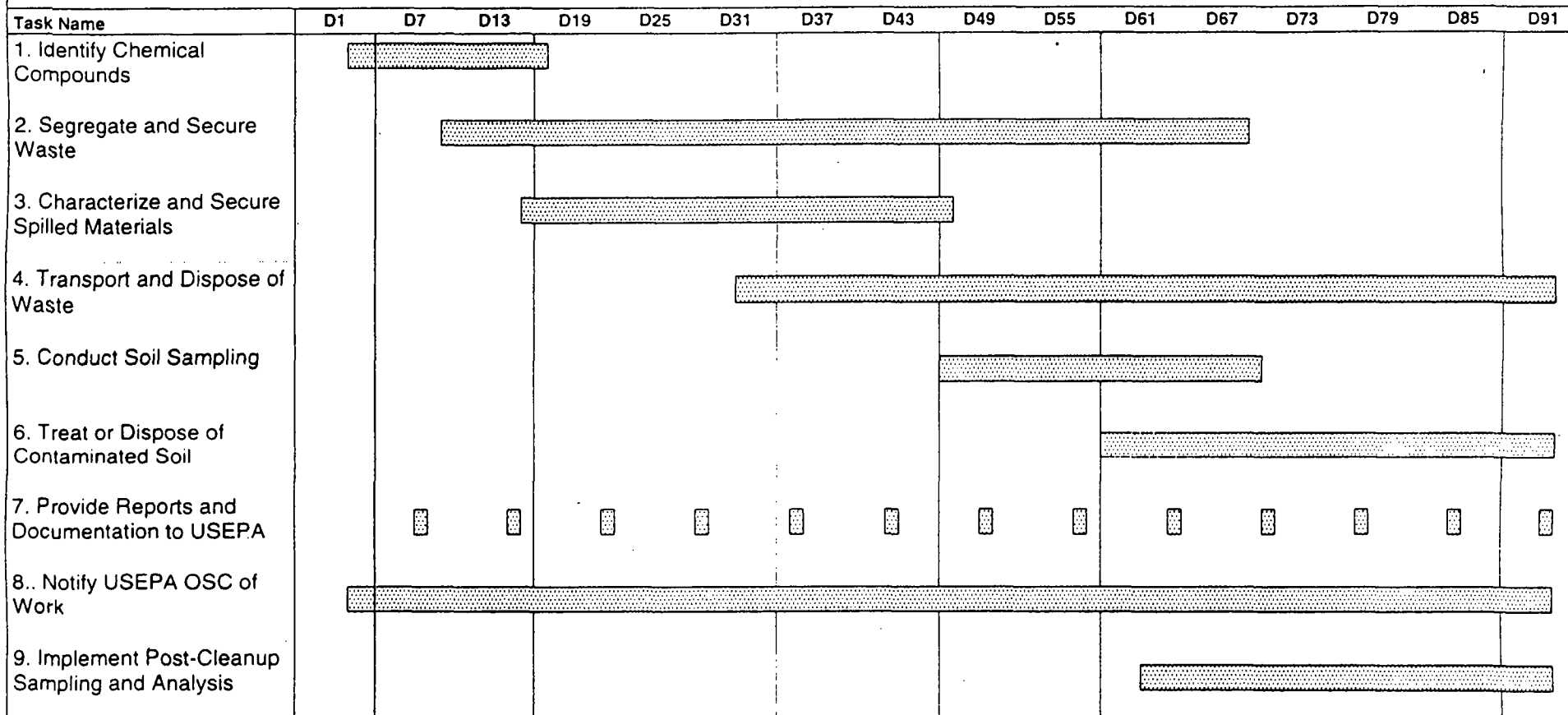
7.5 Standard Operating Procedures & Specifications

Work will be done in accordance with GeoSyntec Standard Operating Procedures and/or Specifications as compiled on an as-needed basis. These will be provided to USEPA before initiation of the activity. Standard Operating Procedures for sampling materials in containers will be compiled after the initial Site reconnaissance.

DRAFT

GeoSyntec Consultants

EXHIBIT 4.1
ESTIMATED PROJECT SCHEDULE
POMONA PLATING CLEAN-UP, POMONA, CALIFORNIA



**POMONA PLATING SITE
POMONA, CALIFORNIA**

**QUALITY ASSURANCE PROJECT PLAN
In Response to
EPA Unilateral Administrative Order 98-09**

Prepared for:

Mr. David Distefano
572 Escalante Drive
Ivins, Utah 84738
(435) 628-0583

Prepared by:

GeoSyntec Consultants
2100 Main Street, Suite 150
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10 July 1998

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Table 1	Summary of Analytical Methods
Table 2	Sampling Methods and Procedures

1. INTRODUCTION

This Quality Assurance Project Plan (QAPP) for the sampling and analysis of chemical waste and soil at the Pomona Plating Facility Site is designed to be implemented in conjunction with the Workplan, which is being submitted concurrently with this QAPP. The purpose of the QAPP is to outline specific quality assurance/quality control (QA/QC) procedures to ensure that waste characterization data collected for the project meet the data quality objectives and are of acceptable quality.

The QAPP provides a brief description of the project organization; outlines the field data objectives and the data quality objectives; describes the procedures for sampling and analysis quality control; describes procedures for data reduction, validation, and reporting; and presents requirements for corrective action and system and performance audits.

The U.S. Environmental Protection Agency (USEPA) issued Unilateral Administrative Order 98-09 (the Order), to Pomona Plating on 21 May 1998. The Order was issued following the results of the Site Assessment conducted by USEPA on 5 May 1998. This QAPP is being submitted in response to pertinent portions of Item VII.A.37 of the Order. This section of the Order requires the inclusion of a QAPP with the Work Plan that is consistent with the "Quality Assurance/Quality Control Guidance for Removal Activities: Sampling QA/QC Plan and Data Validation Procedures," USEPA OSWER Directive 9360.4-01, dated April 1990 (USEPA, 1990). Section 2 of the Workplan contains more specific project background information.

2. DATA USE OBJECTIVES

The primary objectives of the proposed field activities are: (i) to characterize unknown chemical wastes present at the site in order to screen waste management options; (ii) to provide data for implementation of waste management; (iii) to determine if surface and subsurface soils at the site have been contaminated with chemical waste; and (iv) to evaluate the post-cleanup condition of the site. These objectives will be met by performing the tasks outlined in Section 3 of the Workplan. Samples will be obtained from each of the following: unlabeled drums, vats, and other containers;

spilled material encountered in water treatment and plating areas; and surface and subsurface (to a depth of 5 ft) soil sampling locations. The exact locations and number of samples will be determined after a site reconnaissance is performed.

3. DATA QUALITY ASSURANCE OBJECTIVES

Data quality is measured by the ability of the collected data to meet specific quantitative and qualitative objectives. Quantitative objectives include precision, accuracy, and completeness. Qualitative objectives include representativeness and comparability. The USEPA has established three levels of QA/QC objectives that may be used to meet the data quality objectives for a project: QA1, QA2, and QA3 [USEPA, 1990]. The QA characteristics and requirements for these objectives vary, but all three require that the data meet minimum requirements for completeness, representativeness, and comparability as defined by USEPA (1990).

The objective for the data obtained from this site will be to provide a quick, preliminary assessment of site contamination in order to meet the objective of completing the tasks outlined in the Workplan within 90 days. This type of objective is referred to as QA1, or a screening objective [USEPA, 1990], and is considered to be most appropriate for the proposed field activities because the data will be used for characterization and screening purposes only. The QA requirements for data obtained for objective QA1 are specified in Section 6.0 of this QAPP.

4. SAMPLE COLLECTION, QUALITY CONTROL AND CUSTODY PROCEDURES

Sections 3.2 and 3.6 of the Workplan outline the chemical waste and soil sampling and analysis procedures that will be implemented during the field sampling program. Details for these sampling procedures and the QA/QC procedures that apply to these field sampling activities are presented in this section of the QAPP. These activities have been designed in order to comply with the data use objectives presented in Section 2.0 of this QAPP.

4.1 Sample Collection Procedures

Chemical wastes at the site will be investigated in liquid, sludge and solid media in order to categorize the hazardous wastes present at the site. The wastes will be analyzed for the parameters described in Section 3.2 of the Workplan using the methods described in Section 6.1 of this QAPP.

Liquid Chemical Wastes: Unknown liquid chemical wastes are currently stored in tanks and drums at the site. Prior to sampling, the pH of the liquid in each container will be measured and recorded in field logbooks and on the corresponding container label. Solutions that are determined to be pH-compatible may be mixed to obtain a composite sample in order to optimize the time and cost required for analyses.

The liquid in each container, or the composite liquid, will be sampled using a drum thief, a Teflon bailer, or other appropriate sampling equipment, and placed in the appropriate sample containers (Table 2). While collecting samples from drums and containers, the GeoSyntec Drum Handling Program, which is presented in the Health and Safety Plan (HASP), will be followed.

Sludges: Waste sludges will be sampled from one-ton waste bags that are currently stored at the site. These samples will be obtained from the surface of the sludge to a depth of 1 foot using stainless steel spoons. A sufficient number of samples will be collected from each bag to obtain a representative composite sample. The sludge samples will be placed in a stainless steel bowl, mixed, and split into the appropriate sample containers (Table 2)

Soils: Soil samples will be obtained at a limited number of locations in areas where surface and/or subsurface soil contamination is suspected. At each location, one surface and one subsurface soil sample (at a depth of up to 5 feet) will be obtained. Surface soil samples will be collected using stainless steel spoons. Subsurface soil samples will be obtained using hand augering techniques. Each sample will be placed in a stainless steel bowl, mixed, and split into the appropriate sample containers (Table 2).

4.2 Equipment Decontamination Procedures

Sampling equipment will be decontaminated between samples by (in the following order): alconox and water wash, nitric acid rinse, tap water rinse, and distilled water rinse.

4.3 Disposal of Contaminated Materials

Excess waste samples will be emptied back into the original containers. Decontamination solutions, used personal protective equipment (PPE), and other contaminated materials will be stored in drums, labeled, and left on site for disposal at a later date pending analytical results. Non-hazardous waste trash will be placed in plastic trash bags for disposal at an appropriate licensed landfill.

4.4 Sample Handling and Custody Requirements

Samples will be stored in coolers with ice immediately after sampling. Breakable or otherwise fragile sample containers will be wrapped in plastic bubble-wrap to prevent damage during shipment. Chain-of-custody (COC) records will be maintained for each sample collected to provide an accurate written record of the possession and holding of samples from the time of collection through data analysis and reporting. The following information will be specified for each sample on the COC form: sample number; sample date; sample time; sample location and depth, if appropriate; preservative, if appropriate; analyses to be performed; and special instructions to the laboratory. The completed COC form will be sealed inside of the cooler.

Samples will be delivered to the laboratory within 48 hours of collection either by courier or an overnight shipping service. Upon receipt of samples by the laboratory, the laboratory will be responsible for maintaining internal COC of the samples.

4.5 Analytical Methods Requirements

Samples collected for the investigation program will be analyzed by the methods specified in Table 1. Sample containers and sample preservation methods are summarized in Table 2 and are designed to comply with the relevant USEPA methods.

5. PROJECT ORGANIZATION AND RESPONSIBILITIES

GeoSyntec Consultants (GeoSyntec) is contracted by McCutchen, Doyle, Brown & Enersen LLP, on behalf of the site owner, to respond to the USEPA Order.

The GeoSyntec Project Manager (Mr. Jack Caldwell) has primary responsibility for project quality assurance. In addition, quality assurance during implementation of the field sampling program will be directed by the Site Characterization Task Leader. The Project QA/QC Officer (Bert Palmer) will be responsible for conducting a QA/QC review as described in this QAPP. GeoSyntec's Huntington Beach Environmental Health and Safety Coordinator (Brian Hendron) will be responsible for overseeing health and safety matters on the project. The Project Manager will evaluate and implement any necessary corrective action regarding data quality issues.

6. QUALITY ASSURANCE/QUALITY CONTROL REQUIREMENTS

Quality control of laboratory analysis is ensured by (i) performing analytical methods according to prescribed protocols and (ii) analyzing laboratory QA/QC samples to measure precision and accuracy of laboratory methods and equipment, instrument calibration, and preventive maintenance. These procedures are described below.

6.1 Analytical Methods

Laboratory analyses for each parameter will be performed in accordance with prescribed USEPA protocols established in the USEPA document, "Test Methods for Evaluating Solid Waste, SW-846, Update III," dated June 1997. The analytical methods that will be used for this project are shown in Table I. Analyses will be performed in accordance with these procedures unless project requirements necessitate the modification of these methods or the adoption of alternative methods. If an alternative method is used, it will be documented and reported.

6.2 Laboratory Quality Assurance/Quality Control Samples

Laboratory QA/QC samples that will be analyzed during the proposed investigation include method blanks, laboratory duplicates, matrix spikes, matrix spike duplicates, surrogates, and reagent blanks. The description and purpose of these samples is discussed in USEPA (1990).

6.3 Field Quality Assurance/Quality Control Samples

Field QA/QC samples that will be collected during the proposed investigation include field duplicate samples and equipment blanks. The description and purpose of these samples is discussed below.

- Field Duplicate Samples. Field duplicate samples are collected at the same time, from the same location, and in the same manner as a field sample. One field duplicate soil sample will be collected to assess the representativeness of the data.
- Equipment Blanks. Equipment blanks are obtained by filling decontaminated sampling equipment with reagent-grade deionized water, sampling this water, and submitting the sample for analysis. One equipment blank sample will be collected and analyzed to assess potential contamination from the sampling equipment.

7. EQUIPMENT MAINTENANCE AND CALIBRATION

Both field and laboratory equipment involved with the collection and analysis of the samples will be maintained and calibrated to the requirements specified below.

7.1 Laboratory Preventative Maintenance

The analytical laboratory will maintain an adequate supply of critical equipment and analysis items to prevent loss of data due to equipment malfunction. These include, but are not limited to, calibration standards, reagents, glassware, and analytical equipment.

7.2 Laboratory Instrument Calibration

Instruments are calibrated with standard solutions appropriate for the analytical or test method to be performed. Laboratory equipment will be calibrated by laboratory personnel according to the manufacturer's directions, and the requirements of the prescribed analytical methods. Calibration procedures and frequency of calibration will be recorded in appropriate logbooks. Initial and continuing instrument calibrations will meet the criteria outlined in USEPA (1990).

7.3 Field Equipment Preventative Maintenance

Sample collection equipment will be examined, tested, and decontaminated prior to use. Sampling personnel will maintain a supply of key equipment items in the field to prevent loss of data due to equipment malfunction. These include, but are not limited to, tubing, fittings, sample containers, calibration standards, tools, and cleaning equipment.

7.4 Field Instrument Calibration

Field instruments will be calibrated with standard solutions or gases appropriate for the analytical or test method to be performed. Instrument manufacturer recommendations, established analytical procedures, and in some cases, contract specifications, are all utilized in formulating the guidelines for calibration frequency and the concentration of the calibration standards. Calibration data will be recorded in the field logbook for the project.

8. DATA MANAGEMENT AND DELIVERABLES

This section deals with the generation of both laboratory and field data and the protocol for the recording, managing, and reporting this information.

8.1 Laboratory Data

All laboratory analytical data will be reported on data sheets that include laboratory and field sample designations, sample date, date of sample arrival at the laboratory, date of extraction (if any), date of analysis, and method of analysis. The Laboratory QA/QC Officer or designate will review each data sheet, sign and date it, and send it to the GeoSyntec Project Manager.

Data validation will be performed by GeoSyntec personnel as described in Section 12.0 of this QAPP. The results of the data validation will be included with laboratory data sheets when data are reported.

8.2 Field Data

Field logbooks will be used to document data collection activities, including a description of the sample, its origin, sampling time, date, and personnel. Entries will include sufficient detail to potentially reproduce sampling activities. Logbook entries

11. REPORTS TO MANAGEMENT

The GeoSyntec Project QA/QC Officer will document and report the QA/QC results and identified issues to the GeoSyntec Project Manager. The GeoSyntec Project Manager will provide the QA/QC results to McCutchen, Doyle, Brown & Enersen LLP and identify QA/QC issues and provide recommended solutions.

12. DATA VALIDATION

In accordance with USEPA requirements for validation of QA1 data [USEPA, 1990], data validation will comprise review of holding times, blank analyses, detection limits, and data completeness. These items are discussed below.

- Holding Times. Each analytical method has an associated prescribed holding time, which is the maximum amount of time after collection that a sample may be held prior to extraction and/or analysis. Sample integrity becomes questionable for samples extracted and/or analyzed beyond holding times due to potential physical and/or chemical changes to the sample. Analytical reports will be reviewed to verify that analytical method holding times were met.
- Blanks. Method blank and equipment blank samples will be analyzed to check for potential sample contamination during this project. Analytical reports will be reviewed to identify whether blank contamination occurred.
- Detection Limits. Detection limits for target analytes can be elevated if an inadequate volume of sample is collected or if dilution is necessary either to counter matrix interference or to bring target analyte concentrations to within calibration linear range. Results reported as below elevated detection limits must be noted and interpreted with care.

- Data Completeness. The completeness goal for this project is 90 percent. If this goal is not achieved, the rationale for the incomplete data will be assessed and reported.

13. REFERENCES

USEPA (1990), "Quality Assurance/Quality Control Guidance for Removal Activities: Sampling QA/QC Plan and Data Validation Procedures," USEPA OSWER Directive-9360.4-01.

TABLE 1
SUMMARY OF ANALYTICAL METHODS
POMONA PLATING
POMONA, CALIFORNIA

ANALYTE	MATRIX	METHOD	EXTRACTION METHOD
Metals ^a	Liquid Waste Sludge Soil	SW-846 6010A	SW-846 3005A (water) SW-846 3050A (solids)
TCLP Metals ^a	Sludge Soil	SW-846 6010A	SW-846 1311
Cyanide	Liquid Waste	EPA 335.2	NA
Chloride	Liquid Waste	EPA 325.2	NA
Sulfate	Liquid Waste	EPA 300.0A	NA
Nitrate	Liquid Waste	EPA 300.0A	NA
✓ pH	Liquid Waste	EPA 150.1	NA
Acidity	Liquid Waste	EPA 305.1	NA

^a This method can be used to analyze: antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium and zinc.

TABLE 2
SAMPLING METHODS AND PROCEDURES
POMONA PLATING
POMONA, CALIFORNIA

SAMPLE MATRIX	ANALYTICAL PARAMETER	ANALYTICAL METHOD	PRESERVATION METHOD	SAMPLE CONTAINER
Sludge, Soil	Metals	SW-846 6010A	4°C	Glass jar with Teflon-lined lid
Water, Liquid Waste	Metals	SW-846 6010A	HNO ₃ to pH<2, 4°C	1 L polyethylene
Water, Liquid Waste	Cyanide	EPA 335.2	NaOH to pH≥12, 4°C	1 L plastic or glass with Teflon-lined lid
Water, Liquid Waste	Chloride	EPA 325.2	4°C	1 L plastic or glass with Teflon-lined lid
Water, Liquid Waste	Sulfate	EPA 300.0A	4°C	1 L plastic or glass with Teflon-lined lid
Water, Liquid Waste	Nitrate	EPA 300.0A	4°C	1 L glass with Teflon-lined lid
Water, Liquid Waste	pH	EPA 150.1	NA	1 L plastic or glass with Teflon-lined lid
Water, Liquid Waste	Acidity	EPA 305.1	4°C	1 L plastic or glass with Teflon-lined lid

**POMONA PLATING SITE
POMONA, CALIFORNIA**

HEALTH AND SAFETY PLAN

**In Response to
EPA Unilateral Administrative Order 98-09**

Prepared for:

Mr. David Distefano
572 Escalante Drive
Ivins, Utah 84738
(435) 628-0583

Prepared by:

GeoSyntec Consultants
2100 Main Street, Suite 150
Huntington Beach, California 92648
(714) 969-0800



10 July 1998

Project Health and Safety Plan (HASP)

Project Name: Pomona Plating Site

Project Number: HR0228-01

This HASP, which must be kept on site, addresses the safety and health hazards of each phase of site operation, including the requirements and procedures for worker protection. Subcontractors must develop their HASP that is at least as stringent as this HASP.

Only the Site Health and Safety Officer (SHSO) can change or amend this document in agreement with the Environmental Health and Safety Coordinator (EHSC), Project Manager, and Principal-in-Charge. The SHSO must initial any change made to the HASP at the relevant section. Major amendments (e.g., changes in personal protective equipment not provided for in this plan, addition of tasks, etc.) must be documented by indicating the amendment date shown on this page. Amendments will be provided to the EPA with the weekly memorandums.

Prepared by: Karen E. Schmitt for Sherry Hall 7/10/98
for Industrial Hygienist Date

Reviewed by: J. Caldwell for Jack Peng 7/10/98
Director of Environment, Health and Safety Date

Approved by: J. Caldwell 7/10/98
Project Manager Date

[Signature] 7/10/98
Principal-in-Charge Date

Copy to: Jack C. Peng, Ph.D., CIH
Director of Environment, Health, and Safety

Brief Description of Amendment	Amendment Date
_____	_____
_____	_____
_____	_____

All site workers must read this HASP. A pre-entry briefing conducted by the SHSO must be held prior to initiating this project. All sections of this HASP must be reviewed during this briefing. Any worker not in attendance at the initial meeting must be trained by the SHSO on the information covered in the pre-entry briefing meeting. *Tailgate meetings must be held at the beginning of the work shift by the SHSO to discuss important safety and health issues concerning tasks performed on that day. A brief description of topics discussed in tailgate meetings must be documented in the Field Logbook:* After reading the HASP and attending a pre-entry briefing, workers must sign the following acknowledgment statement.

I have read, understand, and agree with the information set forth in this HASP. I have also attended a pre-entry briefing. I agree to perform my work in accordance with this HASP.

Name	Date	Name	Date
<u>[Signature]</u>	<u>7/20/98</u>	<u>[Signature]</u>	<u>[Signature]</u>
<u>[Signature]</u>	<u>7/20/98</u>	<u>Karen Coffee</u>	<u>7/20/98</u>
<u>[Signature]</u>	<u>7/21/98</u>	<u>[Signature]</u>	<u>[Signature]</u>
<u>[Signature]</u>	<u>July 23, 98</u>	<u>[Signature]</u>	<u>[Signature]</u>
<u>[Signature]</u>	<u>7/23/98</u>	<u>[Signature]</u>	<u>[Signature]</u>
<u>[Signature]</u>	<u>7/30/98</u>	<u>[Signature]</u>	<u>[Signature]</u>
<u>[Signature]</u>	<u>7/30/98</u>	<u>[Signature]</u>	<u>[Signature]</u>
<u>[Signature]</u>	<u>[Signature]</u>	<u>[Signature]</u>	<u>[Signature]</u>
<u>[Signature]</u>	<u>[Signature]</u>	<u>[Signature]</u>	<u>[Signature]</u>
<u>[Signature]</u>	<u>[Signature]</u>	<u>[Signature]</u>	<u>[Signature]</u>
<u>[Signature]</u>	<u>[Signature]</u>	<u>[Signature]</u>	<u>[Signature]</u>

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FIGURE 1: Directions to Pomona Valley Hospital/Medical Center

TABLE 1:	Key Personnel and Health & Safety Responsibilities
TABLE 2:	Training/Medical Surveillance/Respiratory Protection Records
TABLE 3:	General Safe Work Practices
TABLE 4:	Contaminants of Concern
TABLE 5:	Hazard Analysis
TABLE 6:	Emergency Contacts
TABLE 7:	Emergency Procedures

APPENDIX A:	Weekly Health & Safety Inspection Checklist
APPENDIX B:	Contaminant Fact Sheets
APPENDIX C:	Hazard Mitigators
APPENDIX D:	Air Monitoring Equipment, Frequency of Readings, and Action Guidelines Per Task
APPENDIX E:	Personal Protective Equipment Per Task
APPENDIX F:	Decontamination Procedures & Equipment
APPENDIX G:	Material Safety Data Sheets

FOR INTERNAL USE ONLY:

Superfund

☐ Industrial Site

☐ Landfill

RCRA Corrective Action

☒ Industrial Site

☐ Landfill

☐ Municipal Landfill

☐ Other

1. SITE/TASK DESCRIPTION

Brief description of site (including information as to current and previous site usage, location and approximate size of site, and a description of the tasks):

- Site Usage: Former electroplating facility
- Site Location: 720 Indigo Court, Pomona, California
- Size of Site: Storage Area: 5,000 ft², Building: 10,000 ft²
- Expected Field Dates: 13 July 1998 - 15 November 1998
(Beginning date - ending date)
- Tasks (described in detail in the Work Plan) for this project include:
 - ① Identification of Chemicals
 - ② Segregation of Chemicals
 - ③ Securing Spilled Wastes
 - ④ Transportation and Disposal
 - ⑤ Surface and Subsurface Sampling
 - ⑥ Soil Treatment or Disposal
 - ⑦ Post Cleanup Sampling and Analysis
- Description of Surrounding Property/Population:

North <u>Santa Fe Railroad tracks</u>	East <u>Mixed Commercial</u>
South <u>Residential</u>	West <u>Residential</u>

2. KEY PERSONNEL AND HEALTH AND SAFETY RESPONSIBILITIES

Table 1 lists project personnel and their responsibilities in regard to health and safety concerns on this project.

3. WORKER TRAINING

Table 2 documents that workers have received the appropriate training requirements. A pre-entry briefing and daily tailgate meetings are also conducted to facilitate on-site training.

4. MEDICAL SURVEILLANCE ☒ Applicable ☐ Not Applicable

Table 2 indicates the workers who participate in the Medical Surveillance Program as per OSHA 29 CFR § 1910.120(f).

☐ Yes ☒ No Additional site-specific medical surveillance is required for the following contaminants of concern::

5. SITE CONTROL

Site control procedures must be implemented before the start of site tasks to control worker exposures to hazardous substances

5.1 Site Map

A site map will be prepared as part of Task 1. A location map showing the route to nearest hospital is provided in Figure 1.

5.2 Buddy System

The Buddy System is required during all work performed in the Exclusion Zone. The Buddy System includes maintaining two-way radio contact with GeoSyntec personnel, and/or visual contact with other GeoSyntec, client, or other subcontractor personnel.

5.3 Work Zones ☒ Applicable ☐ Not Applicable

Three work zones must be established for each task. The Exclusion Zone is defined as the area on-site where contamination is suspected and tasks are to be performed. The Contamination Reduction Zone (CRZ) is defined as the area where equipment and workers are to be decontaminated. The Support Zone is defined as the command area and serves as a storage area for supplies. The exact location and extent of the work zones will be modified as necessary as site investigation information becomes available. The boundaries of the Exclusion Zone, CRZ, and Support Zone must be marked using the following methods:

- | | |
|--|---|
| <input checked="" type="checkbox"/> Warning tape | <input checked="" type="checkbox"/> Traffic cones |
| <input checked="" type="checkbox"/> Signs | <input checked="" type="checkbox"/> Fence |
| <input type="checkbox"/> Other _____ | |

5.4 Site Access

Access to the site must be controlled using the following method:

- | | |
|--|---------------------------------------|
| <input checked="" type="checkbox"/> Sign in/Sign out log | <input type="checkbox"/> Guard |
| <input type="checkbox"/> Identification badges | <input type="checkbox"/> Other: _____ |

5.5 Visitors

Visitors to the site must be continually escorted in order to assure their safety since they may be unfamiliar with the site. Visitors must not be allowed past the Support Zone unless they read, understand, sign, and meet the requirements outlined in this HASP.

5.6 Communications

On-site communications must be conducted through the use of:

- | | |
|---|---------------------------------------|
| <input checked="" type="checkbox"/> Verbal | |
| <input checked="" type="checkbox"/> Two-way radio | <input type="checkbox"/> Horn |
| <input type="checkbox"/> Cellular telephone | <input type="checkbox"/> Siren |
| <input checked="" type="checkbox"/> Hand signals | <input type="checkbox"/> Other: _____ |

Off-site communications must be conducted through the use of:

- | | |
|--|--|
| <input checked="" type="checkbox"/> Cellular telephone | |
| <input type="checkbox"/> Pay phone: Location _____ | |
| <input type="checkbox"/> Other: _____ | |

5.7 Safe Work Practices

General Safe Work Practices that must be implemented during work activities at this site are included in Table 3.

5.8 Inspections

For projects lasting longer than one week, the SHSO must conduct weekly health and safety inspections. The inspections must be documented using the Weekly Health & Safety Inspection checklist included in Appendix A. The Weekly Health & Safety Inspection Checklist must be kept on file at the project site.

6. HAZARD ANALYSIS AND MITIGATORS

Site specific hazards must be identified (through hazard analysis) to determine the appropriate safety and health hazard mitigators needed to protect workers from the identified hazards. Hazard analysis involves a complete review of chemical, physical, and biological hazards.

6.1 Chemical Hazards ☒ Applicable ☐ Not Applicable

Based on previous field analysis conducted at the site, the contaminants of concern include but are not limited to chromic acid, chromium, copper, hydrochloric acid, nickel, nitric acid and polychlorinated biphenyls. If based on the results of the general site reconnaissance, contents of containers are unidentifiable based on labels, markings, etc., the contents will be considered "unknown" and will be handled accordingly.

Contaminant Fact Sheets for each of the known contaminants of concern are provided in Appendix B. If other chemicals are identified during the execution of any task, further hazard analysis will be performed and associated Contaminant Fact Sheets will be added.

Information from the Contaminant Fact Sheets (e.g., flash point, water reactive, etc.) have been utilized in performing the chemical hazard analysis in Table 5 (e.g., fire, inhalation, reactivity, and skin corrosion hazards). If, based on the hazard analysis, chemical hazards exist, hazard mitigators must be utilized to control these hazards (Appendix C). In addition, air monitoring equipment (Section 7) and personal protective equipment (Section 8) must also be utilized to evaluate airborne concentrations and protect workers.

6.2 Physical Hazards ☒ Applicable ☐ Not Applicable

Physical hazards associated with tasks to be performed (e.g., electrocution due to drilling, etc.) and site location (e.g., slips, trip, or falls due to rocky terrain, etc.) have been analyzed in Table 5. If, based on the hazard analysis, physical hazards exist, hazard mitigators (Appendix C) must be implemented.

6.3 Biological Hazards ☒ Applicable ☐ Not Applicable

If, based on the hazard analysis (Table 5), biological hazards exist associated with tasks to be performed and site location (e.g., allergic reactions to poisonous plants or insects indigenous to the area, etc.), hazard mitigators (Appendix C) must be implemented.

7. AIR MONITORING

7.1 Real-Time Air Monitoring ☒ Applicable ☐ Not Applicable

Air monitoring may be performed, as determined on site by the SHSO, during each task when activities are conducted that pose a potential inhalation hazard (Appendix D). For example, during Task 1 - Identification of Chemicals, air monitoring will not be performed during the site reconnaissance, but will be performed during characterization of the chemicals on site. As specific activities are further defined per task, this HASP will be amended to specify air monitoring requirements for each activity.

Frequency of air monitoring readings will be adjusted on site accordingly, with the consent of the SHSO. Action levels based on air monitoring readings are provided in

Appendix D. Equipment must be calibrated at least before work begins each day and at the end of the day. Air monitoring readings and calibration records must be documented in the Field Logbook.

7.2 Personal/Area Air Monitoring ☐ Applicable ☒ Not Applicable

Personal/area air monitoring is required for the following contaminants of concern:

8. PERSONAL PROTECTIVE EQUIPMENT

☒ Applicable ☐ Not Applicable

The general levels of personal protection that may be required for each task are provided in Appendix E. These levels of protection may be upgraded or downgraded (by the SHSO) depending on the air monitoring action guidelines provided in Appendix D and actual activities being performed during the execution of each task. As specific activities are further defined per task, this HASP will be amended to specify specific personal protection requirements for each activity. PPE levels must be indicated in the Field Logbook.

If respirators are worn, workers must adhere to the OSHA's 1998 Respiratory Protection Standard (29 CFR §1910.134). Table 2 provides a record of the site workers' last annual fit test. Beards (i.e., facial hair interfering with the respirator seal) are not allowed.

9. DECONTAMINATION ☒ Applicable ☐ Not Applicable

PPE must be decontaminated as per 29 CFR §1910.120(k). The decontamination procedures, equipment and decontamination solution required for each task are provided in Appendix F. In an emergency, the primary concern is to prevent the loss of life or severe injury to site personnel. If immediate medical treatment is required to save a life, decontamination should be delayed until the victim is stabilized. If decontamination can be performed without interfering with essential life-saving measures or first aid, or if worker has been contaminated with an extremely toxic or corrosive material that could

cause severe injury or loss of life, decontamination must be performed in coordination with or prior to initial medical treatment at the scene.

10. EMERGENCY RESPONSE

A list of contacts local off-site emergency responders, including telephone numbers, is provided in Table 5. The nature of the site work and contaminants of concern should be reviewed with the off-site responders before work begins on this project. The following emergency response equipment is required for this project:

- ☒ Fire Extinguisher: ☐ Type A ☐ Type B ☐ Type C ☒ Type ABC
- ☒ Eyewash (Note: 15 minutes of free-flowing fresh water)
- ☒ SCBA
- ☒ First Aid Kit
- ☒ Shower (Note: for acids and caustics)
- ☐ Other: _____

The emergency response communication system for the site is:

- ☒ Verbal
- ☐ Two-way radio
- ☒ Hand signals: Hand gripping throat = "Out of Air, Can't Breathe"
 Grip partner's wrist or both hands around waist = "Leave area immediately"
 Hands on top of head = "Need assistance"
 Thumps up = "OK; I am all right; I understand"
 Thumps down = "No; negative"
- ☐ Horn
- ☐ Siren
- ☐ Other: _____

In the event that an on-site emergency develops, the procedures delineated in Table 6 are to be followed immediately.

11. CONFINED SPACE ENTRY ☐ Applicable ☒ Not Applicable

If applicable, workers must adhere to the OSHA's Confined Space Entry Requirements [29 CFR §1910.120(j)].

12. SPILL CONTAINMENT ☒ **Applicable** ☐ **Not Applicable**

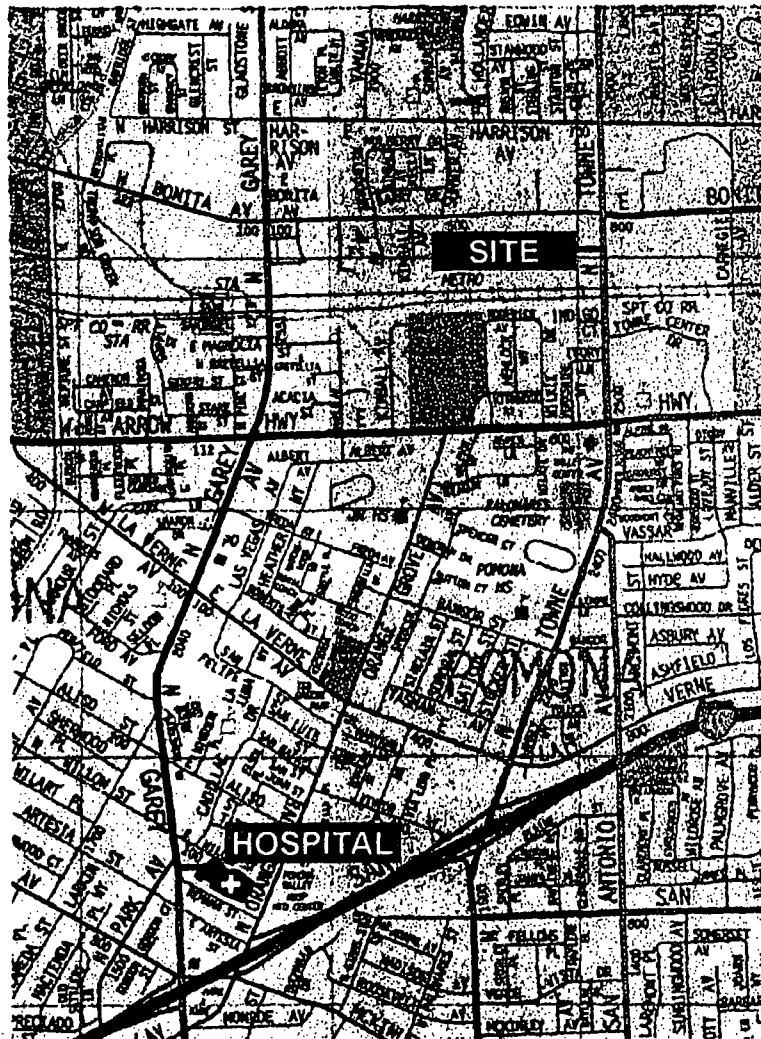
If applicable, workers must adhere to the hazard mitigators for drum handling in Appendix C. Appropriate types and enough quantity of absorbents shall be made available during all tasks where liquids are involved. Personnel shall be wearing the appropriate PPE, when applying the absorbents.

13. HAZARD COMMUNICATION ☒ **Applicable** ☐ **Not Applicable**

The following procedures must be followed for all chemicals brought on site (i.e., decontamination solution, sampling preservatives, gasoline, etc.):

- Labels on incoming primary chemical containers must not be defaced.
- Chemical containers must be stored in appropriate storage cabinets.
- Secondary containers and storage cabinets must be correctly and clearly labeled using the Hazardous Materials Identification System (HMIS) or National Fire Protection Association (NFPA) Labeling System.
- Incompatible chemicals must not be stored together.
- Workers have received training on the hazards of these chemicals as they apply to each task as indicated in Table 2.
- A Material Safety Data Sheet (MSDS) for each chemical must be included in Appendix G.

When chemicals are used on site, workers must adhere to the OSHA's Hazard Communication Regulation (29 CFR §1910.1200).



EXITING THE SITE:

Right on North Towne Avenue
Right on Arrow Highway
Left on North Garey Avenue

Approximately
one mile later,
the hospital is on
your left side.

Pomona Valley Hospital
1798 North Garey Avenue
Pomona, California 91767
(909) 865-9500



**GEOSYNTEC
CONSULTANTS**

DIRECTIONS TO
POMONA VALLEY HOSPITAL/MEDICAL CENTER

FIGURE NO.

1

DATE:

10 JUL 1998

TABLES

TABLE 1
KEY PERSONNEL AND HEALTH & SAFETY RESPONSIBILITIES

Principal-in-Charge	Project Manager (PM)	Site Health & Safety Officer (SHSO)	Project Personnel	Environmental, Health & Safety Coordinator (EHSC)
Name: Thierry Sanglerat	Name: Jack Caldwell	Name: Brian Hendron	All project personnel	Name: Brian Hendron
<p>Approve this HASP and amendments, if any.</p> <p>Assure that all elements of this HASP are implemented.</p>	<ul style="list-style-type: none"> • Approve this HASP and amendments, if any. • See to it that personnel receive this plan, are aware of its provisions, are aware of the potential hazards associated with site operations, are instructed in safe work practices, are familiar with emergency procedures, and that this is documented. • Provide for appropriate monitoring, personal protective equipment, and decontamination materials. • Monitor the Field Logbooks for health and safety work practices employed. • Coordinate with SHSO so that emergency response procedures are implemented. • Verify corrective actions are implemented. 	<ul style="list-style-type: none"> • Prepare and implement project (HASP) and amendments, if any, and report to the Project Manager for action if any deviations from the anticipated conditions exist, and authorize the cessation of work if necessary. • Confirm that site personnel meet the training and medical requirements. • Conduct pre-entry briefing and daily tailgate safety meetings. • Verify that all monitoring equipment and personal protective equipment is operating correctly according to manufacturer's instructions and such equipment is utilized by on-site personnel. Calibrate or verify calibration of all monitoring equipment and record results. • Verify that decontamination procedures are being implemented. • Implement site emergency and follow-up procedures. • Notify the EHSC in the event an emergency occurs. • Performs weekly inspections 	<ul style="list-style-type: none"> • Provide verification of required health and safety training and medical surveillance prior to arriving at the site. • Notify the SHSO of any special medical conditions (e.g., allergies). • Be familiar with and abide by the HASP. • Attend pre-entry briefings and daily tailgate safety meetings. • Immediately report any accidents and/or unsafe conditions to the SHSO. • Individuals are responsible for their own safety. 	<ul style="list-style-type: none"> • Assist with the implementation of the corporate health and safety program. • Review and audit HASP and amendments • Consult on health and safety issues. • Notify Director of Environment, Health & Safety in the event an emergency occurs.

TABLE 2
TRAINING / MEDICAL SURVEILLANCE / RESPIRATORY PROTECTION RECORDS

[illegible]

* Could include site-specific training or medical surveillance.

TABLE 3
GENERAL SAFE WORK PRACTICES

- Minimize contact with excavated or contaminated materials. Do not place equipment on the ground. Do not sit or kneel on potentially contaminated surfaces.
- Smoking, eating, or drinking after entering the work zone and before decontamination must not be allowed. Use of illegal drugs and alcohol are prohibited. Workers taking prescribed medication that may cause drowsiness should not be operating heavy equipment, and should be prohibited from performing tasks where Level C, B, or A personal protective equipment is required.
- Practice good housekeeping. Keep everything orderly and out of potentially harmful situations.
- Use of contact lenses on-site must not be allowed when dictated by working conditions.
- The following conditions must be observed when operating a motor vehicle.
 - Wearing of seat belts is mandatory
 - During periods of rain, fog, or other adverse weather conditions, the use of headlights is mandatory
 - A backup warning system or use of vehicle horn is mandatory when the vehicle is engaged in a backward motion
 - All posted traffic signs and directions from flagmen must be observed
 - Equipment and/or samples transported in vehicles must be secured from movement
 - The use of GeoSyntec acquired vehicles by non-GeoSyntec personnel is prohibited
- In an unknown situation, always assume the worst conditions.
- Be observant of your immediate surroundings and the surroundings of others. It is a team effort to notice and warn of impending dangerous situations. Withdrawal from a hazardous situation to reassess procedures is the preferred course of action.
- Conflicting situations may arise concerning safety requirements and working conditions and must be addressed and resolved rapidly by the SHSO and PM to relieve any motivations or pressures to circumvent established safety policies.
- Unauthorized breaches of specified safety protocol must not be allowed. Workers unwilling or unable to comply with the established procedures must be discharged.

**TABLE 4
HAZARD ANALYSIS**

Tasks	
① Identification of Chemicals	⑤ Surface and Subsurface Sampling
② Segregation of Chemicals	⑥ Soil Treatment or Disposal
③ Securing Spilled Waste	⑦ Post Cleanup Sampling and Analyses
④ Transportation and Disposal	⑧

	①	②	③	④	⑤	⑥	⑦	⑧	Mitigator Document Number
I. Chemical Hazards									
Fire *	GA970610.DOC
Inhalation	GA970611.DOC
Reactivity	GA970612.DOC
Skin absorption	GA970613.DOC
II. Physical Hazards									
Cold Stress	GA970106.DOC
Compressed Gas Cylinder	GA970107.DOC
Drilling	GA970108.DOC
Drowning	GA970124.DOC
Drum Handling	GA970109.DOC
Electrocution	GA970111.DOC
Excavation/Trenching	GA970112.DOC
Eye Injury	GA970614.DOC
Hand/Foot Injury	GA970615.DOC
Heat Stress	GA970113.DOC
Heavy Equipment	GA970114.DOC
Lifting Heavy Loads	GA970116.DOC
Noise	GA970616.DOC
Portable Power/Hand Tool	GA970122.DOC
Radiation Exposure	GA970617.DOC
Slipping/Tripping/Falling	GA970120.DOC
Other:	
III. Biological Hazards									
Allergic Reaction to Poisonous	GA970119.DOC
Insect/Vermin/Snake Bites	GA970618.DOC
Medical Waste	GA970619.DOC
Other:	

* May be caused by 1) acid mixing with potential unknown organics or 2) potential unknown flammable organic liquids

**TABLE 5
EMERGENCY CONTACTS***

Name	Telephone Numbers		Date of Pre-Emergency Notification
	Office	Home	
Fire Department - (909) 626-9671	911	Not Applicable	
Pomona Hospital - (909) 865-9500	911	Not Applicable	
Police Department - (909) 620-2155	911	Not Applicable	
Corporate Human Resources Manager - Mary Masty	(561) 995-0900	(954) 802-7498	
Project Manager - Jack Caldwell	(714) 969-0800	(714) 536-3207	
Principal-in-Charge - Thierry Sanglerat	(714) 969-0800	home: (714) 650-7080 mobile: (714) 293-0103	
Environmental, Health & Safety Coordinator - Brian Hendron	(714) 969-0800	(562) 433-3025	
Director of Environment, Health & Safety Jack C. Peng, Ph.D., C.I.H.	(404) 705-9500	home: (770) 578-4955 mobile: (404) 358-6013	
EPA (if applicable)			
State EPA (if applicable)			
Other			
Other			
Other			
Other			

* To be completed before site activities are initiated.

Written Directions to Hospital:

Exit the site and turn right on Towne Avenue. Continue to Arrow Highway and make a right. Turn left at North Garey Avenue. Continue for approximately 0.8 mile and the hospital is on your left side. Pomona Valley Hospital, 17898 North Garey Avenue, Pomona, California 91767. (909) 865-9500.

TABLE 6
EMERGENCY PROCEDURES

- The SHSO (or alternate) should be immediately notified via the on-site communication system. The SHSO assumes control of the emergency response.
- The SHSO notifies the PM, Principal-in-Charge, and the EHSC of the emergency. The EHSC must then contact the Director of Environment, Health & Safety. If a GeoSyntec employee is injured, the SHSO must contact the worker's Branch Office Manager immediately. If the Branch Office Manager can not be contacted, then the Corporate Human Resources Department must be notified.
- If applicable, the SHSO must notify off-site emergency responders (i.e., fire department, hospital, police department, etc.) and must inform the response team as to the nature and location of the emergency on site.
- If applicable, the SHSO evacuates the site. Site workers should move to their respective refuge stations using the evacuation routes provided on the Site Map.
- For small fires, flames should be extinguished using the fire extinguisher. Large fires should be handled by the local fire department.
- In an unknown situation or if responding to toxic gas emergencies, appropriate PPE, including SCBAs, should be donned.
- If chemicals are accidentally spilled or splashed into eyes or of skin, use eyewash and/or shower.
- Before continuing site operations after an emergency involving toxic gases, the SHSO will don a SCBA and utilize appropriate air monitoring equipment to verify that the site is safe.
- An injured worker must be decontaminated appropriately.
- If a worker is injured, first aid will be administered by workers certified in first aid.
- After the response, the SHSO must complete accident investigation reports obtained from the Branch Office Manager.

APPENDICES

APPENDIX A **WEEKLY HEALTH & SAFETY INSPECTION CHECKLIST**

Project: <u>Pomona Plating Site</u>		Date: _____
Inspected by: _____		
Category	Observations/Corrective Actions (NA if Not Applicable)	
Pre-entry briefing records are current		
Tailgate meeting records are current		
Training/medical surveillance/respiratory protection records are current		
Site map is posted		
Buddy system is implemented		
Work zones are identified		
Site access is controlled		
Visitors are being escorted		
On-site/off-site communications are in working order		
Safe work practices are being implemented		
Any additional hazards incurred?		
Air monitoring equipment is in working condition		
Air monitoring records are being recorded in field logbook		
Air monitoring calibration records are being recorded in field logbook		
PPE storage area is neat and organized		
Standard operating procedures are being implemented		
Housekeeping at decontamination zone is appropriate		
Decontamination procedures are being implemented		
Emergency response equipment is in working condition		
Route to hospital is posted		
Confined space entry program is being implemented		
Spill containment equipment is available		
Chemical inventory is up to date		
Material safety data sheets are available		
Primary and secondary containers are properly labeled		
Housekeeping at the chemical storage area is appropriate		



GEOSYNTEC CONSULTANTS

CONTAMINANT FACT SHEET – COPPER

CAS Number: 7440-50-8		Molecular Weight: 63.5		Color: Reddish	Ionization Potential (eV): NA	Vapor Density (Air=1):																
Synonyms: Copper metal dusts; Copper metal mists		Physical State: solid		Odor: Odorless	Henry's Constant: NA (atm·m ³)/mol)	Vapor Pressure: 0 (mm Hg at 20°C)																
Fire Hazard	NFPA rating: 0 HMIS rating: 0	Reactivity Hazard	NFPA rating: 0 HMIS rating: 0	Health Hazard NFPA rating: 2 HMIS rating: 2																		
Flash Point(°F): NA LEL(%): NA UEL(%): NA Fire Extinguishing Media: <input checked="" type="checkbox"/> Dry Chemical <input checked="" type="checkbox"/> Foam <input checked="" type="checkbox"/> Water Spray <input checked="" type="checkbox"/> CO ₂ Fire Extinguisher: <input type="checkbox"/> Class A <input type="checkbox"/> Class B <input type="checkbox"/> Class C <input type="checkbox"/> Class D <input checked="" type="checkbox"/> Class A/B/C DOT: <input type="checkbox"/> Flammable Gas <input type="checkbox"/> Combustible Liquid		Incompatibilities: <u>Oxidizers, alkalis, sodium azide, acetylene</u> DOT: <input type="checkbox"/> Oxidizer <input type="checkbox"/> Water Reactive		Odor Threshold (ppm): NA IDLH (mg/m ³): 100 <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>TWA</th> <th>STEL</th> <th>C</th> </tr> </thead> <tbody> <tr> <td>Source</td> <td>(mg/m³)</td> <td>(ppm)</td> <td>(ppm)</td> </tr> <tr> <td>OSHA PELs</td> <td>1</td> <td>NA</td> <td>NA</td> </tr> <tr> <td>ACGIH TLVs</td> <td>1</td> <td>NA</td> <td>NA</td> </tr> </tbody> </table> Signs/Symptoms of Acute Exposure: <u>Irritation of eyes; nose; pharynx; nasal perforation; metallic taste; dermatitis</u> DOT: <input type="checkbox"/> Poison				TWA	STEL	C	Source	(mg/m ³)	(ppm)	(ppm)	OSHA PELs	1	NA	NA	ACGIH TLVs	1	NA	NA
	TWA	STEL	C																			
Source	(mg/m ³)	(ppm)	(ppm)																			
OSHA PELs	1	NA	NA																			
ACGIH TLVs	1	NA	NA																			
Carcinogenic: OSHA: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No IARC: <input type="checkbox"/> Group 1 <input type="checkbox"/> Group 2A <input type="checkbox"/> Group 2B <input type="checkbox"/> Group 3 <input type="checkbox"/> Group 4 <input checked="" type="checkbox"/> No NTP: <input type="checkbox"/> Known <input type="checkbox"/> Anticipated <input type="checkbox"/> Process <input checked="" type="checkbox"/> No ACGIH: <input type="checkbox"/> A1 <input type="checkbox"/> A2 <input type="checkbox"/> A3 <input type="checkbox"/> A4 <input type="checkbox"/> A5 <input checked="" type="checkbox"/> No Skin Absorbable: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Skin Corrosive: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No DOT: <input type="checkbox"/> Corrosive																						

Air Monitoring				
Type	Brand/Model No.	Calibration Method/Media	Relative Resp. or Conv. Factor	Acceptable Meter Reading
<input type="checkbox"/> Explosimeter	Gastech GX-82	Methane		
<input type="checkbox"/> PID	MiniRAE	Isobutylene		
<input type="checkbox"/> FID	Foxboro OVA	Methane		
<input type="checkbox"/> Colorimetric Tubes	Drager/ (ppm)	Check pump for leaks		
<input type="checkbox"/> Chemical Monitor <input type="checkbox"/> Dust Monitor	NA	NA		
<input checked="" type="checkbox"/> Collection Medium/Sampling Pump	Gilian Pump/NIOSH#7029	Calibrate pump w/ media	NA	NA

Protective Clothing				
Glove Type/Brand (Breakthrough >2 hrs unless noted):	<input checked="" type="checkbox"/> Viton/North	<input checked="" type="checkbox"/> Viton/Best	<input checked="" type="checkbox"/> Silvershield/North	<input checked="" type="checkbox"/> 4H/Safety
	<input checked="" type="checkbox"/> Neoprene/Mapa	<input checked="" type="checkbox"/> Neoprene/Ans.Ed.	<input checked="" type="checkbox"/> Neoprene/Best Ultraflex	<input checked="" type="checkbox"/> Neoprene/Best Neo.
	<input checked="" type="checkbox"/> PVC/Ans.Ed.	<input checked="" type="checkbox"/> PVC/Best Hustler	<input checked="" type="checkbox"/> Nitrile/LabSafe.	<input checked="" type="checkbox"/> Nitrile/Ans.Ed.
	<input checked="" type="checkbox"/> Butyl/North	<input checked="" type="checkbox"/> PVA/Ans.Ed.	<input checked="" type="checkbox"/> Other	
Suit Type (Breakthrough >1hr unless noted):	<input checked="" type="checkbox"/> Tyvek	<input checked="" type="checkbox"/> Tyvek QC	<input checked="" type="checkbox"/> Tyvek/Saranex	<input checked="" type="checkbox"/> Tychem 7500
			<input checked="" type="checkbox"/> Tychem 9400	<input checked="" type="checkbox"/> Tychem 10,000
			<input checked="" type="checkbox"/> Other	

Respiratory Protection	
<input checked="" type="checkbox"/> Air Purifying	<input type="checkbox"/> Air Supplied Only
Maximum Use Concentration (ppm): Half mask: HEPA Full face: HEPA	

Notes:
 Prepared by: Sherry Hall
 Date: 7/9/98



CONTAMINANT FACT SHEET – HYDROCHLORIC ACID

CAS Number: 7647-01-0		Molecular Weight: 36.5		Color: Colorless to slightly yellow		Ionization Potential (eV): 12.74		Vapor Density (Air=1): 1.268																	
Synonyms: Anhydrous hydrogen chloride; Aqueous hydrogen chloride; Muriatic acid		Physical State: Gas; Liquid		Odor: Pungent; irritating		Henry's Constant: NA ((atm x m ³)/mol)		Vapor Pressure: 40.5 (mm Hg at 20°C)																	
Fire Hazard NFPA rating: 0 HMIS rating: 0		Reactivity Hazard NFPA rating: 0 HMIS rating: 0		Health Hazard NFPA rating: 3 HMIS rating: 3																					
Flash Point(°F): NA LEL(%): NA UEL(%): NA Fire Extinguishing Media: <input checked="" type="checkbox"/> Dry Chemical <input checked="" type="checkbox"/> Foam <input checked="" type="checkbox"/> Water Spray <input checked="" type="checkbox"/> CO ₂ Fire Extinguisher: <input type="checkbox"/> Class A <input type="checkbox"/> Class B <input type="checkbox"/> Class C <input type="checkbox"/> Class D <input checked="" type="checkbox"/> Class A/B/C		Incompatibilities: Hydroxides; amines; alkalis; copper; brass; zinc. <u>NOTE: Corrosive to most metals.</u>		Odor Threshold (ppm): 0.255-10.06 IDLH (ppm): 50 <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>TWA</th> <th>STEL</th> <th>C</th> </tr> </thead> <tbody> <tr> <td>Source (ppm)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>OSHA PELs</td> <td>NA</td> <td>NA</td> <td>5</td> </tr> <tr> <td>ACGIH TLVs</td> <td>NA</td> <td>NA</td> <td>5</td> </tr> </tbody> </table>			TWA	STEL	C	Source (ppm)				OSHA PELs	NA	NA	5	ACGIH TLVs	NA	NA	5	Carcinogenic: OSHA: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No IARC: <input type="checkbox"/> Group 1 <input type="checkbox"/> Group 2A <input type="checkbox"/> Group 2B <input type="checkbox"/> Group 3 <input type="checkbox"/> Group 4 <input checked="" type="checkbox"/> No NTP: <input type="checkbox"/> Known <input type="checkbox"/> Anticipated <input type="checkbox"/> Process <input checked="" type="checkbox"/> No ACGIH: <input type="checkbox"/> A1 <input type="checkbox"/> A2 <input type="checkbox"/> A3 <input type="checkbox"/> A4 <input type="checkbox"/> A5 <input checked="" type="checkbox"/> No Skin Absorbable: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Skin Corrosive: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No DOT: <input type="checkbox"/> Corrosive			
	TWA	STEL	C																						
Source (ppm)																									
OSHA PELs	NA	NA	5																						
ACGIH TLVs	NA	NA	5																						
DOT: <input type="checkbox"/> Flammable Gas <input type="checkbox"/> Combustible Liquid		DOT: <input type="checkbox"/> Oxidizer <input type="checkbox"/> Water Reactive		DOT: <input type="checkbox"/> Poison																					

Air Monitoring				
Type	Brand/Model No.	Calibration Method/Media	Relative Resp. or Conv. Factor	Acceptable Meter Reading
<input type="checkbox"/> Explosimeter	Gastech GX-82	Methane		
<input type="checkbox"/> PID	MiniRAE	Isobutylene		
<input type="checkbox"/> FID	Foxboro OVA	Methane		
<input checked="" type="checkbox"/> Colorimetric Tubes	Drager/CH29501(0.5-25ppm)	Check pump for leaks	NA	NA
<input type="checkbox"/> Chemical Monitor <input type="checkbox"/> Dust Monitor	NA	NA		
<input checked="" type="checkbox"/> Collection Medium/Sampling Pump	Gilian Pump/NIOSH#7903	Calibrate pump w/ media	NA	NA

Protective Clothing				
Glove Type/Brand (Breakthrough >2 hrs unless noted):				
<input type="checkbox"/> Viton/North	<input type="checkbox"/> Viton/Best	<input checked="" type="checkbox"/> Silvershield/North	<input checked="" type="checkbox"/> 4H/Safety	
<input checked="" type="checkbox"/> Neoprene/Mapa	<input type="checkbox"/> Neoprene/Ans.Ed.	<input type="checkbox"/> Neoprene/BestUltraflex	<input type="checkbox"/> Neoprene/BestNeo.	
<input checked="" type="checkbox"/> PVC/Ans.Ed.	<input type="checkbox"/> PVC/BestHustler	<input checked="" type="checkbox"/> Nitrile/LabSafe.	<input type="checkbox"/> Nitrile/Ans.Ed.	
<input type="checkbox"/> Butyl/North	<input checked="" type="checkbox"/> PVA/Ans.Ed.	<input type="checkbox"/> Other		
Suit Type (Breakthrough >1hr unless noted): <input type="checkbox"/> Tyvek <input checked="" type="checkbox"/> Tyvek QC <input checked="" type="checkbox"/> Tyvek/Saranex <input type="checkbox"/> Tychem7500 <input checked="" type="checkbox"/> Tychem 9400 <input type="checkbox"/> Tychem10,000 <input type="checkbox"/> Other				

Respiratory Protection	
<input checked="" type="checkbox"/> Air Purifying	<input type="checkbox"/> Air Supplied Only
Maximum Use Concentration (ppm): Half mask: 50 Full face: 250	

Notes: Use acid gas cartridge for air purifying respirator

Prepared by: Sherry Hall Date: 7/9/98



GEO SYNTEC CONSULTANTS

CONTAMINANT FACT SHEET - NICKEL

CAS Number: 7440-02-0		Molecular Weight: 58.7		Color: Lustrous; silvery		Ionization Potential (eV): NA		Vapor Density (Air=1): NA																																				
Synonyms: Nickel catalyst		Physical State: solid		Odor: Odorless		Henry's Constant: NA (atm x m ³)/mol		Vapor Pressure: 0 (mm Hg at 20°C)																																				
Fire Hazard NFPA rating: 1 HMIS rating: 1		Reactivity Hazard NFPA rating: 0 HMIS rating: 0		Health Hazard		NFPA rating: 2 HMIS rating: 2																																						
Flash Point(°F): NA LEL(%): NA UEL(%): NA Fire Extinguishing Media: <input checked="" type="checkbox"/> Dry Chemical <input type="checkbox"/> Foam <input checked="" type="checkbox"/> Water Spray <input type="checkbox"/> CO ₂ Fire Extinguisher: <input type="checkbox"/> Class A <input type="checkbox"/> Class B <input type="checkbox"/> Class C <input type="checkbox"/> Class D <input checked="" type="checkbox"/> Class A/B/C DOT: <input type="checkbox"/> Flammable Gas <input type="checkbox"/> Combustible Liquid		Incompatibilities: <u>Strong acids; sulfur; selenium; wood & other combustibles; nickel nitrate.</u> DOT: <input type="checkbox"/> Oxidizer <input type="checkbox"/> Water Reactive		Odor Threshold (ppm): NA IDLH (ppm): 10mg/m ³ <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>TWA</th> <th>STEL</th> <th>C</th> </tr> </thead> <tbody> <tr> <td>Source (mg/m³)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>OSHA PELs</td> <td>1</td> <td>NA</td> <td>NA</td> </tr> <tr> <td>ACGIH TLVs</td> <td>1</td> <td>NA</td> <td>Na</td> </tr> </tbody> </table> Signs/Symptoms of Acute Exposure: <u>dermatitis; allergic asthma; neuritis</u> DOT: <input type="checkbox"/> Poison			TWA	STEL	C	Source (mg/m ³)				OSHA PELs	1	NA	NA	ACGIH TLVs	1	NA	Na	Carcinogenic: OSHA: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No IARC: <input checked="" type="checkbox"/> Group 1 <input type="checkbox"/> Group 2A <input type="checkbox"/> Group 2B <input type="checkbox"/> Group 3 <input type="checkbox"/> Group 4 <input type="checkbox"/> No NTP: <input type="checkbox"/> Known <input checked="" type="checkbox"/> Anticipated <input type="checkbox"/> Process <input type="checkbox"/> No ACGIH: <input type="checkbox"/> A1 <input type="checkbox"/> A2 <input type="checkbox"/> A3 <input type="checkbox"/> A4 <input type="checkbox"/> A5 <input checked="" type="checkbox"/> No Skin Absorbable: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Skin Corrosive: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No DOT: <input type="checkbox"/> Corrosive																						
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Maximum Use Concentration (ppm): Half mask: HEPA Full face: HEPA																																												
Notes: Prepared by: Sherry Hall																																												
Date: 7/9/98																																												



CONTAMINANT FACT SHEET – NITRIC ACID

CAS Number: 7697-37-2		Molecular Weight: 63.0		Color: Colorless; Yellow or Red		Ionization Potential (eV): 11.95		Vapor Density (Air=1): NA																	
Synonyms: Aqua Fortis; Engravers acid; Hydrogen nitrate; Red Fuming; White Fuming		Physical State: Liquid		Odor: Acid, suffocating		Henry's Constant: NA ((atm x m ³)/mol)		Vapor Pressure: 48 (mm Hg at 20°C)																	
Fire Hazard NFPA rating: 0 HMIS rating: 0		Reactivity Hazard NFPA rating: 0 HMIS rating: 1		Health Hazard NFPA rating: 3 HMIS rating: 3																					
Flash Point(°F): N/A LEL(%): N/A UEL(%): N/A Fire Extinguishing Media: <input checked="" type="checkbox"/> Dry Chemical <input type="checkbox"/> Foam <input checked="" type="checkbox"/> Water Spray <input type="checkbox"/> CO ₂ Fire Extinguisher: <input type="checkbox"/> Class A <input type="checkbox"/> Class B <input type="checkbox"/> Class C <input type="checkbox"/> Class D <input checked="" type="checkbox"/> Class A/B/C DOT: <input type="checkbox"/> Flammable Gas <input type="checkbox"/> Combustible Liquid		Incompatibilities: <u>Combustable materials; metallic powders; hydrogen sulfide; carbides; alcohols. Note: Reacts with water to produce heat. Corrosive to metals.</u> DOT: <input type="checkbox"/> Oxidizer <input type="checkbox"/> Water Reactive		Odor Threshold (ppm): 0.27 IDLH (ppm): 25 <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>TWA</th> <th>STEL</th> <th>C</th> </tr> </thead> <tbody> <tr> <td>Source (ppm)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>OSHA PELs</td> <td>2</td> <td>NA</td> <td>NA</td> </tr> <tr> <td>ACGIH TLVs</td> <td>2</td> <td>4</td> <td>NA</td> </tr> </tbody> </table> Signs/Symptoms of Acute Exposure: <u>Irritation of eyes, skin, mucous membrane; delayed pulmonary edema, pneumonitis; dental erosion; bronchitis</u> DOT: <input type="checkbox"/> Poison			TWA	STEL	C	Source (ppm)				OSHA PELs	2	NA	NA	ACGIH TLVs	2	4	NA	Carcinogenic: OSHA: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No IARC: <input type="checkbox"/> Group 1 <input type="checkbox"/> Group 2A <input type="checkbox"/> Group 2B <input type="checkbox"/> Group 3 <input type="checkbox"/> Group 4 <input checked="" type="checkbox"/> No NTP: <input type="checkbox"/> Known <input type="checkbox"/> Anticipated <input type="checkbox"/> Process <input checked="" type="checkbox"/> No ACGIH: <input type="checkbox"/> A1 <input type="checkbox"/> A2 <input type="checkbox"/> A3 <input type="checkbox"/> A4 <input type="checkbox"/> A5 <input checked="" type="checkbox"/> No Skin Absorbable: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Skin Corrosive: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No DOT: <input checked="" type="checkbox"/> Corrosive			
	TWA	STEL	C																						
Source (ppm)																									
OSHA PELs	2	NA	NA																						
ACGIH TLVs	2	4	NA																						

Air Monitoring				
Type	Brand/Model No.	Calibration Method/Media	Relative Resp. or Conv. Factor	Acceptable Meter Reading
<input type="checkbox"/> Explosimeter	Gastech GX-82	Methane		
<input type="checkbox"/> PID	MiniRAE	Isobutylene		
<input type="checkbox"/> FID	Foxboro OVA	Methane		
<input checked="" type="checkbox"/> Colorimetric Tubes	Drager/6728311(1-50ppm)	Check pump for leaks	NA	NA
<input type="checkbox"/> Chemical Monitor <input type="checkbox"/> Dust Monitor	NA	NA		
<input checked="" type="checkbox"/> Collection Medium/Sampling Pump	Gilian Pump/NIOSH#7903	Calibrate pump w/ media	NA	NA

Protective Clothing				
Glove Type/Brand (Breakthrough >2 hrs unless noted):				
<input type="checkbox"/> Viton/North	<input type="checkbox"/> Viton/Best	<input type="checkbox"/> Silvershield/North	<input type="checkbox"/> 4H/Safety	
<input type="checkbox"/> Neoprene/Mapa	<input type="checkbox"/> Neoprene/Ans.Ed.	<input type="checkbox"/> Neoprene/Best Ultraflex	<input type="checkbox"/> Neoprene/Best Neo.	
<input type="checkbox"/> PVC/Ans.Ed.	<input type="checkbox"/> PVC/Best Hustler	<input type="checkbox"/> Nitrile/LabSafe.	<input type="checkbox"/> Nitrile/Ans.Ed.	
<input type="checkbox"/> Butyl/North	<input type="checkbox"/> PVA/Ans.Ed.	<input type="checkbox"/> Other		
Suit Type (Breakthrough >1hr unless noted): <input type="checkbox"/> Tyvek <input checked="" type="checkbox"/> Tyvek QC <input checked="" type="checkbox"/> Tyvek/Saranex <input type="checkbox"/> Tychem 7500 <input checked="" type="checkbox"/> Tychem 9400 <input type="checkbox"/> Tychem 10,000 <input type="checkbox"/> Other				

Respiratory Protection	
<input type="checkbox"/> Air Purifying	<input checked="" type="checkbox"/> Air Supplied Only
Maximum Use Concentration (ppm): Half mask: NA Full face: NA	

Notes: Quick Selection Guide to Chemical Protective Clothing indicates Butyl Rubber; Neoprene; Polyethylene; Saranex; 4H; Barricade; Chemrel; and Responder
Prepared by: Sherry Hall Date: 7/9/98



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CONTAMINANT FACT SHEET - POLYCHLORINATED BIPHENYLS (54%)

CAS Number: 11097-69-1		Molecular Weight: 326.0		Color: Colorless to Pale Yellow		Ionization Potential (eV): NA		Vapor Density (Air=1):																	
Synonyms: Chlorodiphenyl (54%); PCB		Physical State: Liquid or Solid		Odor: Mild hydrocarbon		Henry's Constant: NA		Vapor Pressure: 0.00006 (mmHg@20C)																	
Fire Hazard NFPA rating: 1 HMIS rating: 1		Reactivity Hazard NFPA rating: 0 HMIS rating: 0		Health Hazard NFPA rating: 2 HMIS rating: 2																					
Flash Point(°F): NA LEL(%): NA UEL(%): NA Fire Extinguishing Media: <input checked="" type="checkbox"/> Dry Chemical <input checked="" type="checkbox"/> Foam <input checked="" type="checkbox"/> Water Spray <input checked="" type="checkbox"/> CO ₂ Fire Extinguisher: <input type="checkbox"/> Class A <input type="checkbox"/> Class B <input type="checkbox"/> Class C <input type="checkbox"/> Class D <input checked="" type="checkbox"/> Class A/B/C DOT: <input type="checkbox"/> Flammable Liquid <input type="checkbox"/> Combustible Liquid		Incompatibilities: <u>Strong oxidizers</u> DOT: <input type="checkbox"/> Oxidizer <input type="checkbox"/> Water Reactive		Odor Threshold (ppm): NA IDLH (mg/m ³): 5 <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>TWA</th> <th>STEL</th> <th>C</th> </tr> </thead> <tbody> <tr> <td>Source (mg/m³)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>OSHA PELs</td> <td>0.5</td> <td>NA</td> <td>NA</td> </tr> <tr> <td>ACGIH TLVs</td> <td>0.5</td> <td>NA</td> <td>NA</td> </tr> </tbody> </table> Signs/Symptoms of Acute Exposure: <u>Irritation of eyes; chloracne</u> DOT: <input type="checkbox"/> Poison			TWA	STEL	C	Source (mg/m ³)				OSHA PELs	0.5	NA	NA	ACGIH TLVs	0.5	NA	NA	Carcinogenic: OSHA: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No IARC: <input type="checkbox"/> Group 1 <input checked="" type="checkbox"/> Group 2A <input type="checkbox"/> Group 2B <input type="checkbox"/> Group 3 <input type="checkbox"/> Group 4 <input type="checkbox"/> No ACGIH: <input type="checkbox"/> A1 <input type="checkbox"/> A2 <input checked="" type="checkbox"/> A3 <input type="checkbox"/> A4 <input type="checkbox"/> A5 <input type="checkbox"/> No NIOSH: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Skin Absorbable: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Skin Corrosive: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No DOT: <input type="checkbox"/> Corrosive			
	TWA	STEL	C																						
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Air Monitoring																									
Type		Brand/Model No.		Calibration Method/Media		Relative Resp. or Conv. Factor		Acceptable Meter Reading																	
<input type="checkbox"/> Explosimeter																									
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<input type="checkbox"/> FID																									
<input type="checkbox"/> Colorimetric Tubes																									
<input type="checkbox"/> Chemical Monitor <input checked="" type="checkbox"/> Dust Monitor		MIE MiniRam		Factory calibrated		Provides total particulate conc. only		NA																	
<input checked="" type="checkbox"/> Collection Medium/Sampling Pump		Gilian Pump/NIOSH#5503		Calibrate pump w/ media		NA		NA																	
Protective Clothing																									
Glove Type/Brand (Breakthrough >2 hrs unless noted):		<input type="checkbox"/> Viton/North		<input type="checkbox"/> Viton/Best		<input type="checkbox"/> Silvershield/North		<input type="checkbox"/> 4H/Safety																	
		<input checked="" type="checkbox"/> Neoprene/Mapa		<input type="checkbox"/> Neoprene/Ans.Ed.		<input type="checkbox"/> Neoprene/Best Ultraflex		<input type="checkbox"/> Neoprene/Best Neo.(30min)																	
		<input type="checkbox"/> PVC/Ans.Ed.		<input type="checkbox"/> PVC/Best Hustler		<input type="checkbox"/> Nitrile/LabSafe.		<input type="checkbox"/> Nitrile/Ans.Ed.																	
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								<input type="checkbox"/> Other																	
Respiratory Protection																									
<input checked="" type="checkbox"/> Air Purifying		<input type="checkbox"/> Air Supplied Only		Maximum Use Concentration (ppm): Half mask: OV/HEPA Full face: OV/HEPA																					
Notes:																									
Prepared by: Sherry Hall					Date: 16 January 1997																				

APPENDIX C

HAZARD MITIGATORS DIRECTORY

Included in HASP	Hazards	Mitigators Document Number
I. Chemical Hazards		
<input checked="" type="checkbox"/>	Fire	GA970610.DOC
<input checked="" type="checkbox"/>	Inhalation	GA970611.DOC
<input checked="" type="checkbox"/>	Reactivity	GA970612.DOC
<input checked="" type="checkbox"/>	Skin Corrosive	GA970613.DOC
II. Physical Hazards		
<input checked="" type="checkbox"/>	Cold Stress	GA970106.DOC
<input type="checkbox"/>	Compressed Gas Cylinder	GA970107.DOC
<input type="checkbox"/>	Drilling	GA970108.DOC
<input type="checkbox"/>	Drowning	GA970124.DOC
<input checked="" type="checkbox"/>	Drum Handling	GA970109.DOC
<input checked="" type="checkbox"/>	Electrocution	GA970111.DOC
<input checked="" type="checkbox"/>	Excavation/Trenching	GA970112.DOC
<input checked="" type="checkbox"/>	Eye Injury	GA970614.DOC
<input checked="" type="checkbox"/>	Hand/Foot Injury	GA970615.DOC
<input checked="" type="checkbox"/>	Heat Stress	GA970113.DOC
<input checked="" type="checkbox"/>	Heavy Equipment	GA970114.DOC
<input checked="" type="checkbox"/>	Lifting Heavy Loads	GA970116.DOC
<input checked="" type="checkbox"/>	Noise	GA970616.DOC
<input type="checkbox"/>	Portable Power/Hand Tool	GA970122.DOC
<input type="checkbox"/>	Radiation Exposure	GA970617.DOC
<input checked="" type="checkbox"/>	Slipping/Tripping/Falling	GA970120.DOC
<input type="checkbox"/>	Other	
III. Biological Hazards		
<input type="checkbox"/>	Allergic Reaction to Poisonous Plants	GA970119.DOC
<input checked="" type="checkbox"/>	Insect/Vermin/Snake Bites	GA970618.DOC
<input type="checkbox"/>	Medical Waste	GA970619.DOC



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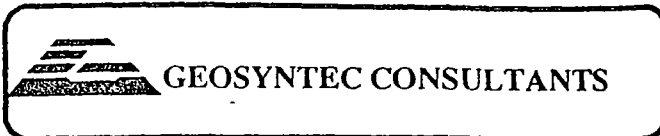
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HAZARD MITIGATORS - FIRE

Applies to Task: ☒ ① ☒ ② ☒ ③ ☒ ④ ☒ ⑤ ☒ ⑥ ☐ ⑦ ☐ ⑧ ☐ ⑨ ☐ ⑩

- Know fire prevention procedures, fire-fighting techniques and essential precautions to prevent injury.
- Know how to use a fire extinguisher.
- Keep all fire extinguishers in a ready condition and accessible at all times. Access to or visibility of extinguishers shall not be obstructed.
- Do not place charged fire extinguishers on the open ground or on floors.
- Remove only the minimum required supply of paints, solvents, or other flammables from storage. At no time shall the quantity removed exceed one day's working supply.
- Do not allow combustible products of rubbish, waste or other residues to accumulate. Oil soaked rags and material subject to spontaneous combustion shall only be stored in non-combustible containers with self-closing lids.
- Do not store gasoline, flammable solvents, and liquids inside a building unless the structure has been approved for flammable storage containers. Only OSHA-approved storage cabinets shall be used for all flammable liquids, paints or solvents.
- Flammable liquids shall be stored in locations that will not interfere with evacuation of the area in case of a fire.
- Do not permit smoking, striking of matches, or other sources of ignition outside of designated "SMOKING" areas.
- Discard cigarette butts, matches or other similar materials in non-combustible containers.
- Do not stop to get anything out of a building or area if evacuation is required. JUST GET OUT - and assemble in the predetermined evacuation assembly points.



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HAZARD MITIGATORS – *INHALATION* (Dust)

Applies to Task: ☒ ① ☒ ② ☒ ③ ☒ ④ ☒ ⑤ ☒ ⑥ ☐ ⑦ ☐ ⑧ ☐ ⑨ ☐ ⑩

- Be aware that the lungs are extremely vulnerable to chemical agents. Even substances that do not directly affect the lungs may pass through lung tissue into the bloodstream, where they are transported to other vulnerable areas of the body.
- Know the odor and odor threshold of the chemicals of concern. Some toxic chemicals present in the atmosphere may not be detected by human senses (i.e., they may be odorless and colorless, and their toxic effects may not produce any immediate symptoms).
- Use engineering controls to reduce vapor concentrations (e.g., ventilation) or dusty atmospheres (e.g., dust suppression techniques).
- Wear respiratory protection as indicated by air monitoring results and/or as required by the Health and Safety Plan.



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HAZARD MITIGATORS - *REACTIVITY*

Applies to Task: ☒ ① ☒ ② ☒ ③ ☒ ④ ☒ ⑤ ☒ ⑥ ☐ ⑦ ☐ ⑧ ☐ ⑨ ☐ ⑩

- Be aware of the chemical properties (e.g., air reactive, water reactive) of the contaminants of concern at the site.
- Be aware of incompatibilities between contaminants of concern at the site.
- Be aware of incompatibilities between chemicals that you bring onto the job site (e.g., decontamination solutions, sample preservatives, etc.).
- Do not store incompatible chemicals together.
- Use segregation techniques when performing drum handling activities.



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HAZARD MITIGATORS - SKIN CORROSIVE

Applies to Task: ☒ ① ☒ ② ☒ ③ ☒ ④ ☒ ⑤ ☒ ⑥ ☐ ⑦ ☐ ⑧ ☐ ⑨ ☐ ⑩

- Be aware of chemicals of concern that can directly injure the skin.
- Do not wear contact lenses in contaminated atmospheres (since they may trap chemicals against the eye surface).
- Keep hands away from face.
- Minimize contact with liquid and solid chemicals.
- Wear protective clothing (e.g., suits and gloves) as required by the Health and Safety Plan.



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HAZARD MITIGATORS -COLD STRESS

Applies to Task: ☒ ① ☒ ② ☒ ③ ☒ ④ ☒ ⑤ ☒ ⑥ ☐ ⑦ ☐ ⑧ ☐ ⑨ ☐ ⑩

- Be aware of the symptoms of cold stress and appropriate first aid measures. Because of the considerable danger to personnel, outdoor work should be suspended if the ambient temperature drops below 0°F or if the wind chill factor drops below -29°F.
- Wear layers of loose fitting clothing, including insulated coveralls, head covering, and boots.
- Minimize wind chill effects by wearing a wind resistant outer shell (such as the required personal protective clothing).
- Minimize lengthy periods of outdoor activity. This may require additional shifts.
- Provide warm shelter.



HAZARD MITIGATORS - DRUM HANDLING

Applies to Task: ☒ ① ☒ ② ☒ ③ ☒ ④ ☐ ⑤ ☒ ⑥ ☐ ⑦ ☐ ⑧ ☐ ⑨ ☐ ⑩

- Use only drums and containers that meet the appropriate DOT, OSHA, and EPA regulations.
- Be aware of the potential hazards of the contents of drums or containers before handling.
- Inspect the integrity of the drum or container before moving. Any drum or container lacking integrity shall be overpacked.
- Consider any unlabeled drum or container as containing a hazardous substance and leave alone until contents are properly identified and labeled.
- Organize site operations to minimize the amount of drum or container movement.
- Never stand on drums or containers.
- Know that bulging drums or containers are an indication of pressure build-up. Pressure can be relieved slowly by carefully loosening the bung. If the possibility of fire or explosion exists, protective shield should be used, and/or remote opening devices.
- Utilize drum/container handling equipment whenever possible. The equipment utilized should have a sufficiently rated load capacity, and should be able to operate smoothly on the available surface.
- Use proper lifting and moving techniques to prevent back injuries, if handling equipment is not available.
- Have a clear view of the available pathway when moving drums. If needed, an additional person should be available to provide guidance.
- Set up drum/container staging areas to safely identify and classify contents for proper shipment. Staging areas shall be provided with adequate ingress and egress routes.
- Label and identify drums and containers as to their contents when moved to the staging areas.
- Cease all site operations immediately if site activities uncover buried drums or containers. The SHSO must be notified. The SHSO will evacuate the site. All unknown situations must be evaluated before site activities are resumed. The services of a specialized contractor trained in handling unknown contaminants may be needed. If, after evaluating the situation, only a portion of the site is effected, that area shall be barricaded and work may continue at other portions of the site.

HAZARD MITIGATORS - *ELECTROCUTION*Applies to Task: ☐ ① ☒ ② ☒ ③ ☒ ④ ☐ ⑤ ☒ ⑥ ☐ ⑦ ☐ ⑧ ☐ ⑨ ☐ ⑩

- A minimum clearance of 20 feet (radius) will be maintained between heavy equipment (i.e., drill rig) and any overhead power lines, regardless of voltage.
- Before subsurface work, a utilities search for underground lines will occur and will be documented.
- Installation and maintenance of electrical facilities or equipment must only be performed by qualified and properly authorized personnel or electrical subcontractors. Apprentice personnel permitted to work on electrical equipment shall be under the surveillance of a fully qualified electrician.
- Electricians shall be familiar with the National Electrical Code; state and local electric codes; OSHA standards, including 29 CFR 1926, Subpart K; and applicable sections of the National Fire Protection Association Codes.
- When working on energized circuits of 440 volts or higher, at least one qualified electrician and one other employee shall be present.
- Do not wear rings, watches or metallic objects that could act as conductors when working with electrical circuits.
- Do not use metal ladders and uninsulated tools while working with electrical circuits and equipment.
- Follow the company Lock-out/Tag-out procedures when applicable. Electrical equipment and lines shall always be considered "energized" until proven "de-energized". Before beginning work, each electrical circuit shall be inspected, tested, and where possible, isolated from the power source. Extreme care shall be exercised as wires designed to operate at ground potential may become energized by faulty or inadequate connections.
- Use only approved grounding equipment as a ground for electrical equipment. Metal frames on electricity-powered equipment, electrical facilities, and transmission equipment shall be connected to the grounding system. Alternative grounding systems complying with applicable electrical codes may be used for temporary portable equipment.
- Protect electrical wires with suitable protective conduits or devices where they are exposed to possible damage.
- Connect grounding devices to a ground before contacting any conductor of a circuit. When grounding devices are removed, they shall be disconnected from the circuit before



being disconnected from ground.

- Equip all portable extension cords with a non-conducting plug and/or another socket shell. All electrical cords shall be equipped with three-blade grounding type plugs.
- Use only heavy duty electrical cords that are not subjected to excessive bending, stretching, or kicking. All cords and wires shall be frequently inspected for signs of defects. Damaged or frayed electrical wires, cords, and plugs shall be immediately replaced by a qualified electrician or other properly trained personnel.
- Install adequate warning signs and barriers (in plain sight) in all areas where hazardous electrical facilities exist.
- Do not permit overloading of electrical circuits at anytime. The replacement of fuses or circuit breakers with makeshift materials or over-capacity fuses is strictly prohibited.
- The type of circuit shall determine the type of protective equipment required. Rubber gloves, sleeves, blankets, mats, and insulated platforms shall be used as required. Questions regarding PPE should be directed to the SHSO.
- Inspect all insulated protective equipment continuously for defects or damages. Any defective equipment shall be replaced before using.
- Establish and enforce testing schedules for insulation qualities for protective equipment. All users shall verify that equipment has been satisfactorily tested prior to use.



HAZARD MITIGATORS - EXCAVATION/TRENCHING

Applies to Task: ☐ ① ☐ ② ☐ ③ ☐ ④ ☐ ⑤ ☒ ⑥ ☐ ⑦ ☐ ⑧ ☐ ⑨ ☐ ⑩

- Remove trees, boulders, etc., adjacent to the work area that could fall into the work area before excavating begins.
- Adequately slope or shore all sides of excavations 5 feet or more in depth before allowing anyone to enter them.
- Store and retain all excavated material (spoil) at least 2 feet or more from the edge of the excavation.
- Examine all excavation work areas and faces for unsafe conditions at least at the beginning of each shift and especially after blasting, a rain, a freeze or a thaw. If unsafe conditions are found, all work in that immediate area shall cease until the necessary precautions have been taken to eliminate the hazardous condition.
- Use diversion ditches or dikes to prevent surface water from entering an excavation, and to provide adequate drainage of the area adjacent to the excavation. Prevent water from accumulating in an excavation.
- Pile, shore, and/or brace sides of excavations if it is necessary to place or operate trucks, materials or other heavy objects on a level above and near the excavation to resist the extra pressure due to such superimposed loads.
- Install substantial stop logs or barricades when mobile equipment is utilized or allowed adjacent to excavations.
- Provide a walkway or bridge with standard guardrails where employees or equipment are required or permitted to cross over excavations.
- Implement the Confined Space Entry Program if employees are to enter excavations of 4 feet deep or deeper.
- Ladders must be located so as to require no more than 25 feet of lateral travel.
- Underpin all nearby existing structures to insure their stability before excavating below the level of the base of the footing of any foundation or retaining wall.
- When sloping an excavation:
 - Excavate to at least the angle of repose except for areas where solid rock allows for line drilling or pre-splitting.
 - Flatten the angle of repose when an excavation has water conditions, silty materials,



loose boulders, and areas where erosion, deep frost action and slide planes appear.

- When shoring an excavation:
 - Place cross braces or trench jacks in a true horizontal position, space vertically and secure to prevent sliding, falling or kickouts.
 - Use portable trench boxes or sliding trench shields, if needed, in place of a shoring system or sloping.
 - Support systems shall be planned and designed by a qualified professional engineer when the excavation is in excess of 20 feet in depth, adjacent to structures or improvement, or subject to vibration or ground water.
 - Removal and backfilling of trench supports must slowly progress together from the bottom of the trench. Jacks or braces shall be released slowly and in unstable soil, ropes shall be used to pull out the jacks or braces from above after employees have cleared the trench.



HAZARD MITIGATORS - *HAND/FOOT INJURY*

Applies to Task: ☒ ① ☒ ② ☒ ③ ☒ ④ ☒ ⑤ ☒ ⑥ ☒ ⑦ ☐ ⑧ ☐ ⑨ ☐ ⑩

- Be aware of "pinch points" when working with tools and heavy equipment.
- Use proper lifting techniques to avoid dropping heavy loads on hands and feet.
- Be aware of moving machinery and heavy equipment in the work area.
- Wear protective gloves as required in the Health and Safety Plan.
- Wear steeltoed boots as required in the Health and Safety Plan.

**HAZARD MITIGATORS - Heat Stress**Applies to Task: ☒ ① ☒ ② ☒ ③ ☒ ④ ☒ ⑤ ☒ ⑥ ☒ ⑦ ☐ ⑧ ☐ ⑨ ☐ ⑩

- Be able to recognize and treat heat stress, and to identify the signs and symptoms of heat stress (e.g., muscle spasms, dizziness, lack of perspiration).
- Maintain an optimal level of physical fitness. Fit individuals may acclimatize more readily to temperatures.
- Adjust work and rest schedules as needed. Establish a work regimen that will provide adequate rest periods for cooling down. This may require additional shifts of workers.
- Provide shelter or shaded areas (77° F is best) to protect personnel during rest periods.
- Maintain worker's body fluids at normal levels to ensure that the cardiovascular system functions adequately. Daily fluid intake must equal the approximate amount of water lost in sweat. Workers are encouraged to drink more than the amount required to satisfy thirst, because thirst is not an adequate indicator of adequate salt and fluid replacement.
- Remove impermeable protective garments during rest periods.
- Do not assign other tasks to personnel during rest periods.
- Provide cooling devices, when necessary, to aid natural body heat exchange during prolonged work or severe heat exposure. Effect devices include field showers or hose-down areas; as well as cooling jackets, vests, or suits.

**HAZARD MITIGATORS - Heavy Equipment**Applies to Task: ☐ ① ☒ ② ☐ ③ ☒ ④ ☐ ⑤ ☒ ⑥ ☐ ⑦ ☐ ⑧ ☐ ⑨ ☐ ⑩

- Apply Hazard Mitigators for motor vehicles when utilizing heavy equipment (where applicable).
- Remember, heavy equipment has the right-of-way over regular vehicles and pedestrians. Yield to heavy equipment.
- Listen for warning signals on heavy equipment.
- Perform a visual inspection and walk around parked heavy equipment before moving to assure that equipment is in good condition and that there are no personnel on the ground that could be injured or objects that could be damaged by vehicle movement.
- Use hand rails and footholds when mounting and dismounting equipment.
- Follow appropriate equipment startup procedures. Brakes, steering, clutches and controls shall be tested.
- Pay attention to workers on the ground who may be in the path and provide warning prior to moving the equipment.
- Permit no one to ride on, or in, heavy equipment. This includes any portion of a backhoe, bulldozer, forklift or the back of a pickup truck, except in locations specifically designed for passenger use and approved by the SHSO.
- Locate and flag underground utilities and buried cables, whenever possible, prior to intrusive activities (such as excavation and drilling).
- Keep haulage vehicles under positive control at all times while operating. Vehicles shall be kept in gear when descending grades.
- Do not use heavy equipment on slopes with steepness exceeding 3H:1V unless operations are consistent with manufacturer's recommendations (if the Owner's Manual is not with the equipment or does not specify slope operating procedures, see the SHSO).
- Operate equipment with booms, blades, buckets, beds, etc., lowered or in a stable position while on slopes. Safety cables tethered to appropriate anchors shall be used for equipment working on steep slopes, where appropriate. The use of cables and anchors must be approved by the SHSO.



- Use rollover protection and seat belts.
- Lower hydraulic systems (e.g., blades, rippers, etc.) to the ground, set brakes, and shut down equipment if malfunction occurs which impairs the ability to control a piece of equipment.
- Suspend in slings or support by hoists or jacks heavy equipment in need of repair. The equipment must also be blocked or cribbed before workers are permitted to work underneath. Working under heavy equipment can pose a crushing hazard.
- Shut off motors, do not allow smoking, and use proper dispensing equipment when refueling gasoline-operated equipment to prevent fire hazards.
- Wear hearing protection if required.
- Maintain eye contact with the heavy equipment operator when working near equipment.
- Be aware of changes in sound of equipment which may indicate a change in direction or activity.

HAZARD MITIGATORS - *Lifting Heavy Loads*Applies to Task: ☒ ① ☒ ② ☒ ③ ☒ ④ ☒ ⑤ ☒ ⑥ ☒ ⑦ ☐ ⑧ ☐ ⑨ ☐ ⑩

- Know and practice proper lifting techniques.
- Limit continuous lifting of weights to 50 pounds or less. Lifts of heavier weights are permitted on an interim basis. Help shall be obtained for lifting of loads greater than 50 pounds. Mechanical equipment should be used on heavy materials when possible. If mechanical assistance is not available, adequate manpower to maintain the 50-pound limit per employee will be required.
- Do not lift more weight than can be handled comfortably, regardless of load weight. If necessary, help should be requested to lift a load so that the lifting is comfortable.
- Use drum dollies when moving drums or barrels.
- Inspect objects for grease or slippery substances before they are lifted to ensure that the object will not slip.
- Do not carry long, bulky or heavy objects without first verifying that the way is clear and that vision is unobstructed. This ensures that other persons or objects will not be struck by the load.
- Do not carry loads that cannot be seen over or around.
- Make sure workers are physically suited for the job before assigning jobs requiring heavy and/or frequent lifting. A person's lifting ability is not necessarily indicated by his height or weight.
- Before lifting an object, consideration should be given to how the object will be set down without pinching or crushing hands or fingers. For example, to place an object on a bench or table, the object should be set on the edge and pushed far enough onto the support so it will not fall. The object can then be released gradually as it is set down, and pushed in place with the hands and body from in front of the object.
- When two or more persons are handling the same object, one should "call the signals". All the persons on the lift should know who this person is and should warn him if anyone in the crew is about to relax his grip.
- Proper lifting includes:
 - *Feet* - Feet should be parted, with one foot alongside the object being lifted and one behind. Feet should be comfortably spread to give greater stability. The rear foot should be in position for the upward thrust of the lift.



- *Back* - Use the sit-down position and keep the back straight, but remember that "straight" does not mean "vertical". A straight back keeps the spine, back muscles, and organs of the body in correct alignment. It minimizes the compression of the abdomen that can cause a hernia.
- *Arms and Elbows* - The load should be drawn close, and the arms and elbows should be tucked into the side of the body. When the arms are held away from the body, they lose much of their strength and power. Keeping the arms tucked in also helps keep body weight centered.
- *Palm* - The palm grip is one of the most important elements of lifting. The fingers and the hand are extended around the object to be lifted. Use the full palm; fingers alone have very little power.
- *Chin* - Tuck in the chin so the neck and head continue the straight back line. Keep the spine straight and firm.
- *Body Weight* - Position the body so its weight is centered over the feet. This provides a more powerful line of thrust and assures better balance. Start the lift with a thrust of the rear foot. Shift hand position so the object can be boosted after knees are bent. Straighten knees as object is lifted or shifted to the shoulders. To change direction, lift the object to a carrying position, and turn the entire body, including the feet. Do not twist your body. In repetitive work, both the person and the material should be positioned so that the worker will not have to twist his body when moving the material. If the object is too heavy to be handled by one person, get help.



HAZARD MITIGATORS - NOISE

Applies to Task: ☐ ① ☒ ② ☐ ③ ☒ ④ ☐ ⑤ ☒ ⑥ ☐ ⑦ ☐ ⑧ ☐ ⑨ ☐ ⑩

- Know the effects of noise, including:
 - Workers being startled, annoyed, or distracted.
 - Physical damage to the ear, pain, and temporary and/or permanent hearing loss.
 - Communication interference that may increase potential hazards due to the inability to warn of danger and proper safety precautions to be taken.
- Utilize feasible administrative or engineering controls if workers are subjected to noise exceeding an 8-hour, time-weighted average (TWA) sound level of 90 dBA (decibels on the A-weighted scale).
- Implement the company Hearing Conservation Program when noise exposures equal or exceed an 8-hour, TWA sound level of 85 dBA.
- Wear hearing protection where applicable.



HAZARD MITIGATORS - INSECT/VERMIN/SNAKE BITES

Applies to Task: ☐ ① ☒ ② ☒ ③ ☒ ④ ☒ ⑤ ☒ ⑥ ☒ ⑦ ☐ ⑧ ☐ ⑨ ☐ ⑩

- Be able to recognize insects/vermin/snakes indigenous to the site location.
- Advise the SHSO if you have allergies to any insects prior to engaging in any field activities.
- Include the following controls:
 - Boots, hoods, netting, gloves, masks, or other personal protection.
 - Repellents.
 - Drainage or spraying of breeding areas.
 - Burning or destruction of nests.
 - Smudge pots and aerosols for protecting small areas.
 - Elimination of unsanitary conditions which propagate insects or vermin.
 - Extermination measures.
 - Inoculation.
- Report any bites or stings to the SHSO and seek first aid immediately.

APPENDIX D

AIR MONITORING EQUIPMENT/FREQUENCY OF READING/ACTION GUIDELINES PER TASK

Applies to Task: ☒ ① ☒ ② ☒ ③ ☒ ④ ☒ ⑤ ☒ ⑥ ☒ ⑦ ☐ ⑧ ☐ ⑨ ☐ ⑩

<input type="checkbox"/> Explosimeter Brand/Model No.: _____ Monitoring Frequency: _____	<input type="checkbox"/> Oxygen Meter Brand/Model No.: _____ Monitoring Frequency: _____	<input type="checkbox"/> Photoionization Detector Brand/Model No.: _____ Monitoring Frequency: _____
Source Reading (% LEL) Action 1 to 10 Continue with caution. Greater than 10 Stop work. Evacuate the area. If upon return, concentration still exceeds 10% LEL, Level B PPE must be acquired and worn by trained personnel. Note: _____	Source Reading (%) Action Less than 19.5 Stop work. Evacuate the area. If upon return, concentration is still <19.5, Level B PPE must be acquired and worn by trained personnel. Continue to work with caution. 19.5 to 23.5 Stop work. Evacuate the area. Greater than 23.5 Note: _____	Breathing Zone Reading Action _____ to _____ Level D PPE _____ to _____ Level C PPE Greater than _____ Stop work. Evacuate the area. If upon return, levels still exceed _____, Level B PPE must be acquired and worn by trained personnel. Note: _____
<input checked="" type="checkbox"/> Chemical Detector Tube - Chromic Acid * Brand/Model No.: <u>Drager / 6728681</u> Monitoring Frequency: <u>To be determined by SHSO</u>	<input checked="" type="checkbox"/> Chemical Detector Tube - Hydrochloric Acid * Brand/Model No.: <u>Drager / CH29501</u> Monitoring Frequency: <u>To be determined by SHSO</u>	<input checked="" type="checkbox"/> Chemical Detector Tube - Nitric Acid * Brand/Model No.: <u>Drager / 6728311</u> Monitoring Frequency: <u>To be determined by SHSO</u>
Breathing Zone Reading (mg/m ³) Action <u>0</u> to <u>0.1</u> Level D PPE <u>0.1</u> to <u>0.5</u> Level C PPE Greater than <u>0.5</u> Stop work. Evacuate the area. If upon return, levels still exceed <u>0.5</u> , Level B PPE must be acquired and worn by trained personnel. Note: <u>0.5 = Maximum Detection Limit of Drager Tube</u>	Breathing Zone Reading (ppm) Action <u>0</u> to <u>2</u> Level D PPE <u>2</u> to <u>25</u> Level C PPE Greater than <u>25</u> Stop work. Evacuate the area. If upon return, levels still exceed <u>25</u> , Level B PPE must be acquired and worn by trained personnel. Note: _____	Breathing Zone Reading (ppm) Action <u>0</u> to <u>1</u> Level D PPE Greater than <u>1</u> Stop work. Evacuate the area. If upon return, levels still exceed <u>1</u> , Level B PPE must be acquired and worn by trained personnel. Note: _____

* To be used when containers are opened and/or liquids are disturbed.

APPENDIX E PERSONAL PROTECTIVE EQUIPMENT PER TASK

Applies to Task: ☒ ① ☒ ② ☒ ③ ☐ ④ ☐ ⑤ ☐ ⑥ ☐ ⑦ ☐ ⑧ ☐ ⑨ ☐ ⑩

<input checked="" type="checkbox"/> * Modified Level D		<input checked="" type="checkbox"/> * Level C		<input type="checkbox"/> * Level B	
Equipment	Material/Type	Equipment	Material/Type	Equipment	Material/Type
<input checked="" type="checkbox"/> Protective clothing	Saranex or Tyvek	<input checked="" type="checkbox"/> Full-face air-purifying respirator	Cartridge Type: Acid Gas/HEPA	<input checked="" type="checkbox"/> SCBA (pressure demand)	
<input checked="" type="checkbox"/> Outer gloves	Polyvinyl Chloride	<input type="checkbox"/> Half-mask air-purifying respirator	Cartridge Type:	<input type="checkbox"/> Air-line System (pressure demand)	
<input checked="" type="checkbox"/> Outer boots	Butyl Rubber or Polyvinyl Chloride	<input checked="" type="checkbox"/> Protective clothing	Tyvek or Saranex	<input checked="" type="checkbox"/> Protective clothing	
<input checked="" type="checkbox"/> Hard hat**		<input checked="" type="checkbox"/> Outer gloves	Polyvinyl Chloride	<input checked="" type="checkbox"/> Outer gloves	
<input checked="" type="checkbox"/> Safety glasses**		<input checked="" type="checkbox"/> Inner gloves	Latex	<input checked="" type="checkbox"/> Inner gloves	
<input checked="" type="checkbox"/> Hard-toed boots**		<input checked="" type="checkbox"/> Outer boots	Butyl Rubber or Polyvinyl Chloride	<input type="checkbox"/> Outer boots	
<input type="checkbox"/> Hearing protection**		<input checked="" type="checkbox"/> Hard hat**		<input checked="" type="checkbox"/> Hard hat**	
<input checked="" type="checkbox"/> Other: Face Shield ***		<input type="checkbox"/> Safety glasses**		<input checked="" type="checkbox"/> Hard-toed boots**	
		<input checked="" type="checkbox"/> Hard-toed boots**		<input checked="" type="checkbox"/> Hearing protection**	
		<input type="checkbox"/> Hearing protection**		<input type="checkbox"/> Escape respirator**	
		<input checked="" type="checkbox"/> Other: Face Shield***		<input type="checkbox"/> Safety "tag" rope**	
				<input type="checkbox"/> Other:	

* If checked, indicates potential levels of PPE, to be specified on site by the SHSO.

** Optional as applicable

*** If splashing hazard exists.

PERSONAL PROTECTIVE EQUIPMENT PER TASK

Applies to Task: ☐ ① ☐ ② ☐ ③ ☐ ④ ☒ ⑤ ☐ ⑥ ☒ ⑦ ☐ ⑧ ☐ ⑨ ☐ ⑩

<input checked="" type="checkbox"/> * Modified Level D		<input type="checkbox"/> * Level C		<input type="checkbox"/> * Level B	
Equipment	Material/Type	Equipment	Material/Type	Equipment	Material/Type
<input checked="" type="checkbox"/> Protective clothing	Saranex or Tyvek	<input checked="" type="checkbox"/> Full-face air-purifying respirator	Cartridge Type:	<input checked="" type="checkbox"/> SCBA (pressure demand)	
<input checked="" type="checkbox"/> Outer gloves	Polyvinyl Chloride	<input type="checkbox"/> Half-mask air-purifying respirator	Cartridge Type:	<input type="checkbox"/> Air-line System (pressure demand)	
<input checked="" type="checkbox"/> Outer boots	Butyl Rubber or Polyvinyl Chloride	<input checked="" type="checkbox"/> Protective clothing		<input checked="" type="checkbox"/> Protective clothing	
<input checked="" type="checkbox"/> Hard hat**		<input checked="" type="checkbox"/> Outer gloves		<input checked="" type="checkbox"/> Outer gloves	
<input checked="" type="checkbox"/> Safety glasses**		<input checked="" type="checkbox"/> Inner gloves		<input checked="" type="checkbox"/> Inner gloves	
<input checked="" type="checkbox"/> Hard-toed boots**		<input checked="" type="checkbox"/> Outer boots		<input type="checkbox"/> Outer boots	
<input type="checkbox"/> Hearing protection**		<input checked="" type="checkbox"/> Hard hat**		<input checked="" type="checkbox"/> Hard hat**	
<input type="checkbox"/> Other:		<input type="checkbox"/> Safety glasses**		<input checked="" type="checkbox"/> Hard-toed boots**	
		<input checked="" type="checkbox"/> Hard-toed boots**		<input checked="" type="checkbox"/> Hearing protection**	
		<input type="checkbox"/> Hearing protection**		<input type="checkbox"/> Escape respirator**	
		<input checked="" type="checkbox"/> Other:		<input type="checkbox"/> Safety "tag" rope**	
				<input type="checkbox"/> Other:	

* If checked, indicates potential levels of PPE, to be specified on site by the SHSO.

** Optional as applicable

PERSONAL PROTECTIVE EQUIPMENT PER TASK

Applies to Task: ☐ ① ☐ ② ☐ ③ ☒ ④ ☐ ⑤ ☒ ⑥ ☐ ⑦ ☐ ⑧ ☐ ⑨ ☐ ⑩

<input checked="" type="checkbox"/> * Modified Level D		<input checked="" type="checkbox"/> * Level C		<input type="checkbox"/> * Level B	
Equipment	Material/Type	Equipment	Material/Type	Equipment	Material/Type
<input checked="" type="checkbox"/> Protective clothing	Saranex or Tyvek	<input checked="" type="checkbox"/> Full-face air-purifying respirator	Cartridge Type: Acid Gas/HEPA	<input checked="" type="checkbox"/> SCBA (pressure demand)	
<input checked="" type="checkbox"/> Outer gloves	Polyvinyl Chloride	<input type="checkbox"/> Half-mask air-purifying respirator	Cartridge Type:	<input type="checkbox"/> Air-line System (pressure demand)	
<input checked="" type="checkbox"/> Outer boots	Butyl Rubber or Polyvinyl Chloride	<input checked="" type="checkbox"/> Protective clothing	Tyvek or Saranex	<input checked="" type="checkbox"/> Protective clothing	
<input checked="" type="checkbox"/> Hard hat**		<input checked="" type="checkbox"/> Outer gloves	Polyvinyl Chloride	<input checked="" type="checkbox"/> Outer gloves	
<input checked="" type="checkbox"/> Safety glasses**		<input checked="" type="checkbox"/> Inner gloves	Latex	<input checked="" type="checkbox"/> Inner gloves	
<input checked="" type="checkbox"/> Hard-toed boots**		<input checked="" type="checkbox"/> Outer boots	Butyl Rubber or Polyvinyl Chloride	<input type="checkbox"/> Outer boots	
<input type="checkbox"/> Hearing protection**		<input checked="" type="checkbox"/> Hard hat**		<input checked="" type="checkbox"/> Hard hat**	
<input checked="" type="checkbox"/> Other:		<input type="checkbox"/> Safety glasses**		<input checked="" type="checkbox"/> Hard-toed boots**	
		<input checked="" type="checkbox"/> Hard-toed boots**		<input checked="" type="checkbox"/> Hearing protection**	
		<input checked="" type="checkbox"/> Hearing protection**		<input type="checkbox"/> Escape respirator**	
		<input type="checkbox"/> Other:		<input type="checkbox"/> Safety "tag" rope**	
				<input type="checkbox"/> Other:	

* If checked, indicates potential levels of PPE, to be specified on site by the SHSO.

** When heavy equipment is in use.

If splashing hazard exists.

APPENDIX F

DECONTAMINATION PROCEDURES AND EQUIPMENT DIRECTORY

[illegible]

DECONTAMINATION PROCEDURES AND EQUIPMENT — MODIFIED LEVEL D

Applies to Task: ☒ ① ☒ ② ☒ ③ ☒ ④ ☒ ⑤ ☒ ⑥ ☒ ⑦ ☐ ⑧ ☐ ⑨ ☐ ⑩

Decontamination Solution: Detergent and Water

	Procedure	Equipment Needed
Station 1	Deposit equipment on plastic drop cloth, or in plastic containers lined with plastic trash bags	Various size containers, plastic trash bags, plastic drop cloth
Station 2	Scrub outer boot covers and gloves with decontamination solution	Containers (20 to 30 gal), decontamination solution, long-handled scrub brushes
Station 3	Rinse off decontamination solution from Station 2 using copious amounts of water	Containers (20 to 30 gal), water, long-handled scrub brushes
Station 4	Remove tape around boots and gloves and deposit in containers lined with plastic trash bag	Containers (20 to 30 gal), plastic trash bags
Station 5	Remove boot covers and outer gloves and deposit in containers lined with plastic trash bag	Containers (20 to 30 gal), plastic trash bags, bench or stool
Station 6	Remove splash suit. Deposit in container lined with plastic trash bag.	Containers (20 to 30 gal), plastic trash bags, bench or stool
Station 7	Remove inner gloves and deposit in container lined with plastic trash bag	Containers (20 to 30 gal), plastic trash bags

DECONTAMINATION PROCEDURES AND EQUIPMENT — LEVEL C

Applies to Task: ☒ ① ☒ ② ☒ ③ ☒ ④ ☐ ⑤ ☒ ⑥ ☒ ⑦ ☐ ⑧ ☐ ⑨ ☐ ⑩

Decontamination Solution: Detergent and Water

	Procedure	Equipment Needed
Station 1	Deposit equipment on plastic drop cloth, or in plastic containers lined with plastic trash bags	Various size containers, plastic trash bags, plastic drop cloth
Station 2	Scrub outer boot covers and gloves with decontamination solution	Containers (20 to 30 gal), decontamination solution, long-handled scrub brushes
Station 3	Rinse off decontamination solution from Station 2 using copious amounts of water	Containers (20 to 30 gal), water, long-handled scrub brushes
Station 4	Remove tape around boots and gloves and deposit in containers lined with plastic trash bag	Containers (20 to 30 gal), plastic trash bags
Station 5	Remove boot covers and outer gloves and deposit in containers lined with plastic trash bag	Containers (20 to 30 gal), plastic trash bags, bench or stool
Station 6	Wash chemical-resistant splash suit, gloves, and safety boots. Scrub with long-handled scrub brush and decontamination solution.	Containers (20 to 30 gal), decontamination solution, long-handled scrub brushes
Station 7	Rinse off decontamination solution using copious amounts of water	Containers (20 to 30 gal), water, long-handled scrub brushes
Station 8	Worker's respirator cartridges are exchanged, new outer gloves and boot covers donned, and joints taped. Worker returns to duty	Respirator cartridges, tape, boot covers, gloves
Station 9	Remove safety boots and deposit in container lined with plastic trash bag	Containers (20 to 30 gal), plastic trash bags, bench or stool, boot jack
Station 10	Remove splash suit. Deposit in container lined with plastic trash bag	Table
Station 11	Wash inner gloves with decontamination solution	Basin or bucket, decontamination solution, small table
Station 12	Rinse inner gloves with water	Water, basin or bucket, small table
Station 13	Remove air purifying respirator. Deposit in container lined with plastic trash bag	Containers (20 to 30 gal), plastic trash bags
Station 14	Remove inner gloves and deposit in container lined with plastic trash bag	Containers (20 to 30 gal), plastic trash bags
Station 15	Remove inner clothing. Place in container lined with plastic trash bag	Containers (20 to 30 gal), plastic trash bags
Station 16	Shower if highly toxic, skin-corrosive, or skin absorbable materials are known or suspected to be present	Water, soap, small table, basin or bucket, field showers, towels
Station 17	Put on clean clothes	Dressing shelter, tables, chairs, lockers, clothes

DECONTAMINATION PROCEDURES AND EQUIPMENT — LEVEL B

Applies to Task: ☒ ① ☒ ② ☒ ③ ☐ ④ ☐ ⑤ ☐ ⑥ ☐ ⑦ ☐ ⑧ ☐ ⑨ ☐ ⑩

Decontamination Solution: Detergent and Water

	Procedure	Equipment Needed
Station 1	Deposit equipment on plastic drop cloth, or in plastic containers lined with plastic trash bags	Various size containers, plastic trash bags, plastic drop cloth
Station 2	Scrub outer boot covers and gloves with decontamination solution	Containers (20 to 30 gal), decontamination solution, long-handled scrub brushes
Station 3	Rinse off decontamination solution from Station 2 using copious amounts of water	Containers (20 to 30 gal), water, long-handled scrub brushes
Station 4	Remove tape around boots and gloves and deposit in containers lined with plastic trash bag	Containers (20 to 30 gal), plastic trash bags
Station 5	Remove boot covers and outer gloves and deposit in containers lined with plastic trash bag	Containers (20 to 30 gal), plastic trash bags, bench or stool
Station 6	Wash chemical-resistant splash suit, SCBA, gloves, and safety boots. Scrub with long-handled scrub brush and decontamination solution.	Containers (20 to 30 gal), decontamination solution, long-handled scrub brushes
Station 7	Rinse off decontamination solution using copious amounts of water	Containers (20 to 30 gal), water, long-handled scrub brushes
Station 8	Worker's air tank is exchanged, new outer gloves and boot covers donned, and joints taped. Worker returns to duty	Air tanks, tape, boot covers, gloves
Station 9	Remove safety boots and deposit in container lined with plastic trash bag	Containers (20 to 30 gal), plastic trash bags, bench or stool, boot jack
Station 10	While still wearing facepiece, remove backpack and place on table; disconnect hose from regulatory valve	Rack, plastic drop cloth, bench or stool
Station 11	Remove splash suit. Deposit in container lined with plastic trash bag	Table
Station 12	Wash inner gloves with decontamination solution	Basin or bucket, decontamination solution, small table
Station 13	Rinse inner gloves with water	Water, basin or bucket, small table
Station 14	Remove facepiece. Deposit in container lined with plastic trash bag	Containers (20 to 30 gal), plastic trash bags
Station 15	Remove inner gloves and deposit in container lined with plastic trash bag	Containers (20 to 30 gal), plastic trash bags
Station 16	Remove inner clothing. Place in container lined with plastic trash bag	Containers (20 to 30 gal), plastic trash bags
Station 17	Shower if highly toxic, skin-corrosive, or skin absorbable materials are known or suspected to be present	Water, soap, small table, basin or bucket, field showers, towels
Station 18	Put on clean clothes	Dressing shelter, tables, chairs, lockers, clothes

APPENDIX G

ATERIAL SAFETY DATA SHEETS DIRECTORY

(to be completed as chemicals are brought onto the site)

Included in HASP	Chemical
<input type="checkbox"/>	Acetone
<input type="checkbox"/>	Alconox
<input type="checkbox"/>	Anhydrous Ammonia
<input type="checkbox"/>	Bentonite
<input type="checkbox"/>	Diesel Fuel Oil No. 2-D
<input type="checkbox"/>	Gasoline, Lead-free
<input type="checkbox"/>	<i>n</i> -Hexane
<input type="checkbox"/>	Hydrochloric Acid
<input type="checkbox"/>	Isopropyl Alcohol
<input type="checkbox"/>	Nitric Acid
<input type="checkbox"/>	Sulfuric Acid, Concentrated
<input type="checkbox"/>	Other:
<input type="checkbox"/>	Other:
<input type="checkbox"/>	Other:
<input type="checkbox"/>	Other:
<input type="checkbox"/>	Other:
<input type="checkbox"/>	Other:
<input type="checkbox"/>	Other:
<input type="checkbox"/>	Other:
<input type="checkbox"/>	Other:

APPENDIX B CONTAMINANT FACT SHEET DIRECTORY

Included In HASP	Chemical Name	Synonyms	Document Number
<input type="checkbox"/>	Acetone	Dimethyl ketone; Ketone propane; 2-Propanone	GA971212
<input type="checkbox"/>	Aldrin	HHDN; Octalene	GA980283
<input type="checkbox"/>	Aniline	Aminobenzene; Aniline Oil; Benzeneamine; Phenylamine	GA980093
<input type="checkbox"/>	Benzene	Benzol; Phenyl hydride	GA970125
<input type="checkbox"/>	Bis(2-ethylhexyl)phthalate	Di(2-ethylhexyl)phthalate	GA970207
<input type="checkbox"/>	Cadmium	Cadmium metal	GA970126
<input type="checkbox"/>	Carbon disulfide	Carbon bisulfide	GA970832
<input type="checkbox"/>	Chlorobenzene	Benzene chloride; Chlorobenzyl; MCB; Phenyl chloride	GA970127
<input type="checkbox"/>	Chloroform	Methane trichloride; Trichloromethane	GA970128
<input checked="" type="checkbox"/>	Chromic Acid	Chromic Anhydride; Chromic Oxide; Chromium (VI) Oxide; Chromium Trioxide	GA980758
<input checked="" type="checkbox"/>	Chromium	Chromium metal	GA970129
<input checked="" type="checkbox"/>	Copper	Copper Metal Dusts, Copper Metal Mists	GA980756
<input type="checkbox"/>	2,4-D	Dichlorophenoxyacetic acid	GA971255
<input type="checkbox"/>	DDT	p,p-DDT; Dichlorodiphenyltrichloroethane; 1,1,1-Trichloro-2,2-bis(p-chlorophenyl)ethane	GA980284
<input type="checkbox"/>	Diaminotoluene	Toluenediamine, Methylphenylenediamine, TDA, Tolyenediamine	GA980090
<input type="checkbox"/>	1,2-Dichlorobenzene	O-DCB; Orthodichlorobenzene	GA970130
<input type="checkbox"/>	1,2-Dichloroethane	Ethylene dichloride; Glycol dichloride	GA970954
<input type="checkbox"/>	1,2-Dichloroethylene	1,2-Dichloroethene; (cis, trans, or sym-) Acetylene dichloride	GA970953
<input type="checkbox"/>	1,2-Dichloropropane	Propylene dichloride; Dichloro-1,2-propane	GA970131
<input type="checkbox"/>	Dinitrotoluene	Dinitrotoluene; DNT; Methylintrobenzene	GA980092
<input type="checkbox"/>	Endosulfan	Benzoepin; Endosulphan; Thiodan	GA971257
<input type="checkbox"/>	Ethylbenzene	Ethylbenzol; Phenylethane	GA970132
<input type="checkbox"/>	Ethylene Dibromide	EDB; 1,2-Dibromoethane, Ethylene bormide, Glycol dibromide	GA980285
<input type="checkbox"/>	Gasoline	Motor fuel; Motor spirits; Natural gasoline; Petrol	GA970833
<input type="checkbox"/>	Hexachloroethane	Carbon hexachloride; Ethane hexachloride; Perchloroethane	GA971252
<input checked="" type="checkbox"/>	Hydrochloric Acid	Aqueous Hydrogen Chloride; Muriatic Acid	GA980757
<input type="checkbox"/>	Isophorone	Isoacetophorone; 3,5,5-Trimethyl 2- cyclohexenone	GA971253
<input type="checkbox"/>	Isopropanol	Isopropyl alcohol; IPA; 2-Propanol	GA970133
<input type="checkbox"/>	Lead (inorganic)	Lead metal	GA970134
<input type="checkbox"/>	Lindane	BHC; HCH; Hexachlorocyclohexane	GA971273
<input type="checkbox"/>	Mercury	Colloidal mercury; Metallic mercury; Quicksilver	GA970135
<input type="checkbox"/>	Methane	Fire damp; Marsh gas; Methyl hydride	GA970834
<input type="checkbox"/>	Methoxycor	P,p-Dimethoxydiphenyltrichlorethane; DMDY	GA971256
<input type="checkbox"/>	2-Methylphenol	Ortho-Cresol; 2-Cresol; O-Cresylic Acid; 1-Hydroxy-2-Methylbenzene; 2-Hydroxytoluene	GA980091
<input type="checkbox"/>	Methyl ethyl ketone	2-Butanone; MEK; Methyl acetone	GA970136
<input type="checkbox"/>	Methyl chloroform	1,1,1-Trichloroethane	GA970137
<input type="checkbox"/>	Methylene chloride	Dichloromethane; Methylene Dichloride	GA970138
<input type="checkbox"/>	Naphthalene	Naphthalin; Tar Camphor; White Tar	GA970139
<input checked="" type="checkbox"/>	Nickel	Elemental Metal; Nickel Catalyst	GA980759
<input checked="" type="checkbox"/>	Nitric Acid	Agua Furtis; Engraver's Acid; Hydrogen Nitrate; Red Fuming; White Fuming	GA980760

APPENDIX B CONTAMINANT FACT SHEET DIRECTORY (CONTINUED)

Included in HASP	Chemical Name	Synonyms	Document Number
<input type="checkbox"/>	Nitroaniline	Para-aminonitrobenzene; 4-Nitroaniline; 4-Nitrobenzenamine; p-Nitrophenylamine. PNA	GA980094
<input type="checkbox"/>	Nitrobenzene	Essence of mirbane; Nitrobenzol; Oil of mirbane	GA980095
<input type="checkbox"/>	Silver	Silver metal; Argentum	GA970142
<input type="checkbox"/>	Pentachlorophenol	PCP; Penta; 2,3,4,5,6-Pentachlorophenol	GA970140
<input type="checkbox"/>	Phenol	Carbonic acid; Hydroxybenzene; Monohydroxybenzene; Phenol alcohol; Phenyl hydroxide	GA971250
<input checked="" type="checkbox"/>	Polychlorinated biphenyls (54%)	PCBs; Chlorodiphenyl	GA970141
<input type="checkbox"/>	2,4,5-T	2,4,5-Trichlorophenoxyacetic acid	GA971254
<input type="checkbox"/>	Tetrachloroethylene	Tetrachloroethylene; Perchlorethylene; Perk	GA971274
<input type="checkbox"/>	o-Toluidene	2-Methylbenzeneamine; O-Aminotoluene; 1-Methyl-2-aminobenzene; O-Methylaniline; 2-Methylaniline; ortho-Toluidine	GA980096
<input type="checkbox"/>	Toluene	Methyl benzene; Methyl benzol	GA970143
<input type="checkbox"/>	Toxaphene	Chlorinated camphene	GA970153
<input type="checkbox"/>	1,1,2-Trichloroethane	Ethane trichloride; B-Trichloroethane; Vinyl trichloride	GA971249
<input type="checkbox"/>	1,2,4-Trichloroethene	Trichlorobenzene; 1,2,4-Trichlorobenzel	GA971251
<input type="checkbox"/>	Trichloroethene	Trichloroethylene; TCE	GA970145
<input type="checkbox"/>	Trichlorofluoromethane	Fluorotrichloromethane; Freon II	GA970144
<input type="checkbox"/>	1,2,3-Trichloropropane	Allyl trichloride; Glycerol trichlorohydrin; Glyceryl trichlorohydrin; Trichlorohydrin	GA980286
<input type="checkbox"/>	Vinyl chloride	Chloroethene; VC; VCM	GA970146
<input type="checkbox"/>	Xylene (Mixed Isomers)	o-xylene; p-xylene; m-xylene	GA970147



GEOSYNTEC CONSULTANTS

CONTAMINANT FACT SHEET – CHROMIC ACID

CAS Number: 1333-82-0		Molecular Weight: 100.0		Color: Dark red solid		Ionization Potential (eV): NA		Vapor Density (Air=1): NA																																				
Synonyms: Chromic anhydride; Chromic oxide; Chromium trioxide		Physical State: Flakes; powder; aqueous solution		Odor: Odorless		Henry's Constant: NA ($\text{atm} \times \text{m}^3/\text{mol}$)		Vapor Pressure: Very low (mm Hg at 20°C)																																				
Fire Hazard NFPA rating: 0 HMIS rating: 0		Reactivity Hazard NFPA rating: 1 HMIS rating: 1		Health Hazard		NFPA rating: 3 HMIS rating: 3																																						
Flash Point (°F): NA LEL (%): NA UEL (%): NA Fire Extinguishing Media: <input type="checkbox"/> Dry Chemical <input type="checkbox"/> Foam <input checked="" type="checkbox"/> Water Spray <input type="checkbox"/> CO ₂ Fire Extinguisher: <input checked="" type="checkbox"/> Class A <input type="checkbox"/> Class B <input type="checkbox"/> Class C <input type="checkbox"/> Class D <input type="checkbox"/> Class A/B/C DOT: <input type="checkbox"/> Flammable Gas <input type="checkbox"/> Combustible Liquid		Incompatibilities: <u>Combustible, organic, or other readily oxidizable materials (paper, wood, sulfur, aluminum, plastics, etc.); corrosive to metals.</u> DOT: <input checked="" type="checkbox"/> Oxidizer <input type="checkbox"/> Water Reactive		Odor Threshold (ppm): NA IDLH (ppm): 15mg/m ³ as Cr (VI) <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>TWA</th> <th>STEL</th> <th>C</th> </tr> </thead> <tbody> <tr> <td>Source (ppm)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>OSHA PELs</td> <td>NA</td> <td>NA</td> <td>0.1</td> </tr> <tr> <td>ACGIH TLVs</td> <td>0.05</td> <td>NA</td> <td>NA</td> </tr> </tbody> </table> Signs/Symptoms of Acute Exposure: <u>Irritation of respiratory system; nasal septum perforation; liver & kidney damage; eye injury; conjunctivitis; skin ulcer; dermatitis</u> DOT: <input type="checkbox"/> Poison			TWA	STEL	C	Source (ppm)				OSHA PELs	NA	NA	0.1	ACGIH TLVs	0.05	NA	NA	Carcinogenic: OSHA: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No IARC: <input checked="" type="checkbox"/> Group 1 <input type="checkbox"/> Group 2A <input type="checkbox"/> Group 2B <input type="checkbox"/> Group 3 <input type="checkbox"/> Group 4 <input type="checkbox"/> No NTP: <input checked="" type="checkbox"/> Known <input type="checkbox"/> Anticipated <input type="checkbox"/> Process <input type="checkbox"/> No ACGIH: <input checked="" type="checkbox"/> A1 <input type="checkbox"/> A2 <input type="checkbox"/> A3 <input type="checkbox"/> A4 <input type="checkbox"/> A5 <input type="checkbox"/> No Skin Absorbable: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Skin Corrosive: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No DOT: <input type="checkbox"/> Corrosive																						
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Protective Clothing Glove Type/Brand (Breakthrough >2 hrs unless noted): <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"><input type="checkbox"/> Viton/North</div> <div style="width: 50%;"><input type="checkbox"/> Viton/Best</div> <div style="width: 50%;"><input type="checkbox"/> Silvershield/North</div> <div style="width: 50%;"><input type="checkbox"/> 4H/Safety</div> <div style="width: 50%;"><input type="checkbox"/> Neoprene/Mapa</div> <div style="width: 50%;"><input type="checkbox"/> Neoprene/Ans.Ed.</div> <div style="width: 50%;"><input type="checkbox"/> Neoprene/Best Ultraflex</div> <div style="width: 50%;"><input type="checkbox"/> Neoprene/Best Neo.</div> <div style="width: 50%;"><input type="checkbox"/> PVC/Ans.Ed.</div> <div style="width: 50%;"><input type="checkbox"/> PVC/Best Hustler</div> <div style="width: 50%;"><input type="checkbox"/> Nitrile/Lab Safe.</div> <div style="width: 50%;"><input type="checkbox"/> Nitrile/Ans.Ed.</div> <div style="width: 50%;"><input type="checkbox"/> Butyl/North</div> <div style="width: 50%;"><input type="checkbox"/> PVA/Ans.Ed.</div> <div style="width: 50%;"><input type="checkbox"/> Other</div> </div>																																												
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Respiratory Protection <input checked="" type="checkbox"/> Air Purifying <input type="checkbox"/> Air Supplied Only Maximum Use Concentration (mg/m ³): Half mask: 1.0 Full face: 5																																												
Notes: Dust/mist respirator cartridge: Quick Selection Guide to Chemical Protective Clothing indicates Butyl Rubber, Polyvinyl chloride, and 4H Prepared by: Sherry Hall Date: 7/9/98																																												



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ENVIRONMENTAL, HEALTH & SAFETY
DEPARTMENT

CONTAMINANT FACT SHEET - CHROMIUM

CAS Number: 7440-47-3		Molecular Weight: 52.0		Color: Blue-white		Ionization Potential (eV): NA		Vapor Density (Air=1): 1.79																	
Synonyms: Chromium metal; Chrome		Physical State: Solid		Odor: Odorless		Henry's Constant: NA		Vapor Pressure: 0 (mmHg@20C)																	
Fire Hazard NFPA rating: 1 HMIS rating: 1		Reactivity Hazard NFPA rating: 1 HMIS rating: 1		Health Hazard		NFPA rating: 2 HMIS rating: 2																			
Flash Point(°F): NA LEL(%): NA UEL(%): NA Fire Extinguishing Media: <input checked="" type="checkbox"/> Dry Chemical <input type="checkbox"/> Foam <input type="checkbox"/> Water Spray <input type="checkbox"/> CO ₂ Fire Extinguisher: <input type="checkbox"/> Class A <input type="checkbox"/> Class B <input type="checkbox"/> Class C <input type="checkbox"/> Class D <input checked="" type="checkbox"/> Class A/B/C DOT: <input type="checkbox"/> Flammable Liquid <input type="checkbox"/> Combustible Liquid		Incompatibilities: <u>Strong oxidizers (such as hydrogen peroxide); alkalis</u> DOT: <input type="checkbox"/> Oxidizer <input type="checkbox"/> Water Reactive		Odor Threshold (ppm): NA IDLH (mg/m ³): 250 <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>TWA</th> <th>STEL</th> <th>C</th> </tr> </thead> <tbody> <tr> <td>Source (mg/m³)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>OSHA PELs</td> <td>1</td> <td>NA</td> <td>NA</td> </tr> <tr> <td>ACGIH TLVs</td> <td>0.05</td> <td>NA</td> <td>NA</td> </tr> </tbody> </table> Signs/Symptoms of Acute Exposure: <u>Irritation of eyes & skin</u> DOT: <input type="checkbox"/> Poison			TWA	STEL	C	Source (mg/m ³)				OSHA PELs	1	NA	NA	ACGIH TLVs	0.05	NA	NA	Carcinogenic: OSHA: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No IARC: <input type="checkbox"/> Group 1 <input type="checkbox"/> Group 2A <input type="checkbox"/> Group 2B <input checked="" type="checkbox"/> Group 3 <input type="checkbox"/> Group 4 <input checked="" type="checkbox"/> No ACGIH: <input checked="" type="checkbox"/> A1 <input type="checkbox"/> A2 <input type="checkbox"/> A3 <input type="checkbox"/> A4 <input type="checkbox"/> A5 <input type="checkbox"/> No NIOSH: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Skin Absorbable: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Skin Corrosive: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No DOT: <input type="checkbox"/> Corrosive			
	TWA	STEL	C																						
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OSHA PELs	1	NA	NA																						
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<input type="checkbox"/> Chemical Monitor <input checked="" type="checkbox"/> Dust Monitor		MIE MiniRam		Factory calib. w/ AZ road dust		Provides total particulate conc. only		NA																	
<input checked="" type="checkbox"/> Collection Medium/Sampling Pump		Gilian Pump/NIOSH#7024		Calibrate pump w/ media		NA		NA																	
Protective Clothing																									
Glove Type/Brand (Breakthrough >2 hrs unless noted):		<input checked="" type="checkbox"/> Viton/North <input checked="" type="checkbox"/> Neoprene/Mapa <input checked="" type="checkbox"/> PVC/Ans. Ed. <input checked="" type="checkbox"/> Butyl/North		<input checked="" type="checkbox"/> Viton/Best <input checked="" type="checkbox"/> Neoprene/Ans. Ed. <input checked="" type="checkbox"/> PVC/BestHustler <input checked="" type="checkbox"/> PVA/Ans. Ed.		<input checked="" type="checkbox"/> Silvershield/North <input checked="" type="checkbox"/> Neoprene/BestUltraflex <input checked="" type="checkbox"/> Nitrile/LabSafe. <input type="checkbox"/> Other		<input checked="" type="checkbox"/> 4H/Safety <input checked="" type="checkbox"/> Neoprene/BestNeo.(30min) <input checked="" type="checkbox"/> Nitrile/Ans. Ed.																	
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Respiratory Protection																									
<input checked="" type="checkbox"/> Air Purifying		<input type="checkbox"/> Air Supplied Only		Maximum Use Concentration (ppm): Half mask: HEPA			Full face: HEPA																		
Notes: Chromium dust suspended in carbon dioxide is ignitable & explosive when heated.																									
Prepared by: Sherry Hall					Date: 16 January 1997																				

Volume II
Attachment D
Geosyntec Original Surface and Subsurface Site Sampling Plan

***POMONA PLATING SITE
POMONA, CALIFORNIA***

**SURFACE AND SUBSURFACE
SOIL SAMPLING
WORKPLAN**

**In Response to
EPA Unilateral Administrative Order 98-09**

Prepared for:

**Mr. David Distefano
572 Escalante Drive
Ivins, Utah 84738
(435) 628-0583**

Prepared by:

**GeoSyntec Consultants
2100 Main Street, Suite 150
Huntington Beach, California 92648
(714) 969-0800**



4 September 1998

Pomona Plating Site

GeoSyntec Consultants

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FIGURE

Figure 1 Proposed Sampling Locations

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1. INTRODUCTION

1.1 General

This *Surface and Subsurface Soil Sampling Workplan* ("Workplan") responds to the U.S. Environmental Protection Agency (USEPA) Unilateral Administrative Order 98-09 (the Order) for the Pomona Plating Site, at 720 Indigo Court, Pomona, California (the Site).

This Workplan was prepared by GeoSyntec Consultants, Inc. (GeoSyntec) for Mr. David Distefano, owner of the site, for submittal to the USEPA and for implementation subsequent to USEPA approval.

1.2 Purpose

The purpose of the work described in this Workplan is to respond to the fifth and sixth tasks specified in the EPA Order. This Workplan expands on and details the plan for conducting soil sampling and establishing the procedures for, if necessary, disposing of, stabilizing, or treating grossly contaminated soils as outlined in the EPA approved *Pomona Plating Site Workplan* (GeoSyntec Consultants. 10 July 1998).

The *Pomona Plating Site Workplan* states that the work plan activities will consist of:

"Task 5: "Conducting surface and subsurface soil sampling to determine the full nature and extent of soil contamination."

The following is the description of the task implementation in the Pomona Plating Site Workplan:

- establish locations of sampling points on the basis of the Site reconnaissance, the inventory, and the characteristics of the materials;

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- remove or core through the concrete, when necessary, and sample the upper three feet of the soil (i.e., 0 to 1 ft, 2 to 3 ft), probably with a hand auger;
- analyze soil and concrete chip surface samples for chemical contamination, based on the characteristics of the materials on or in containers above the specific sample location; and
- perform additional delineation sampling as warranted from the results of the first phase of sampling and analysis.

Task 6 "Dispose, stabilize, or treat grossly contaminated soils found at or near the surface at the direction of the OSC."

The following is the description of the task implementation in the Pomona Plating Site Workplan:

- develop extent of contamination maps and removal plans for affected soils;
- categorize the subsurface based on level and type of contamination and determine appropriate treatment or disposal; and
- work with a qualified and licensed contractor to excavate, treat, haul and dispose of the wastes in accordance with all applicable regulations."

This Workplan does not address Task 9 *Post-Cleanup Sampling and Analyses*: "Provide and implement a post-cleanup sampling and analysis plan". The information obtained during execution of the tasks described in this Workplan will, however, provide data that may be used to compile and implement the post-closure sampling and analyses plan, if necessary.

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2. WORKPLAN IMPLEMENTATION OBJECTIVES

2.1 Sampling Objectives

The objectives of the work to be done in terms of this Workplan relevant to sampling concrete, asphalt, and soil are as follows:

- obtain and test concrete, asphalt, and the underlying soil at selected locations in and around the building;
- establish whether or not past operations have affected the concrete asphalt, and subsurface soil; and
- *"determine the full nature and extent of soil contamination"*

2.2 Treat and Dispose Objectives

The objectives of the work to be done in terms of this Workplan relevant to potentially disposing, stabilizing, or treating affected concrete, asphalt, and soil are as follows:

- identify those parts of the site where the concrete, asphalt, and soil are clean and where removal, stabilization, treatment, or disposal are not required;
- identify those parts of the site where it may be possible to encapsulate affected soil with slabs, covers, or perimeter containment barriers consistent with the planned future industrial use of the site;
- identify those parts of the site where soil stabilization or treatment may be an appropriate way to deal with affected soils;
- establish appropriate affected soil stabilization or treatment methods if such an approach is selected to deal with affected soil;

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- identify the concrete, asphalt, and soil that must be removed and replaced to provide for the planned future industrial use of the site; and
- obtain and compile information that may be used to prepare plans and specifications and bid documents for selecting a contractor to implement necessary remedial work.

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3. PROCEDURES

3.1 Health & Safety

Work will be done in accordance with the *Pomona Plating Site Health and Safety Plan (GeoSyntec Consultants. 10 July 1998)*.

3.2 Quality

Work will be done in accordance with the project specific *Pomona Plating Site Quality Assurance Project Plan (GeoSyntec Consultants. 10 July 1998)*. Additional requirements described in Sections 3.3 and 6.0 will also be implemented.

3.3 Additional Procedures

The following standards and guidelines may be used as appropriate:

- ASTM D 1452: Practice for Soil Investigation and Sampling by Auger Borings;
- ASTM D 1586: Test Method for Penetration Test and Split-Barrel Sampling of Soils;

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4. SAMPLE LOCATIONS AND DEPTHS

4.1 Sampling Locations - General

Prior to commencing the sampling work, the sampling locations will be established in the field on the basis of accessibility, the visual appearance of the cleared area, and site conditions. The proposed sampling locations are shown on Figure 1.

4.2 Drilling Sequence

The general sequence of drilling and sampling will follow the sequence in which the specific locations are discussed in Section 4.3. The actual sequence and location of advancing boreholes will be adjusted to accommodate access and safety considerations and to account for the results of soil testing from previously advanced boreholes.

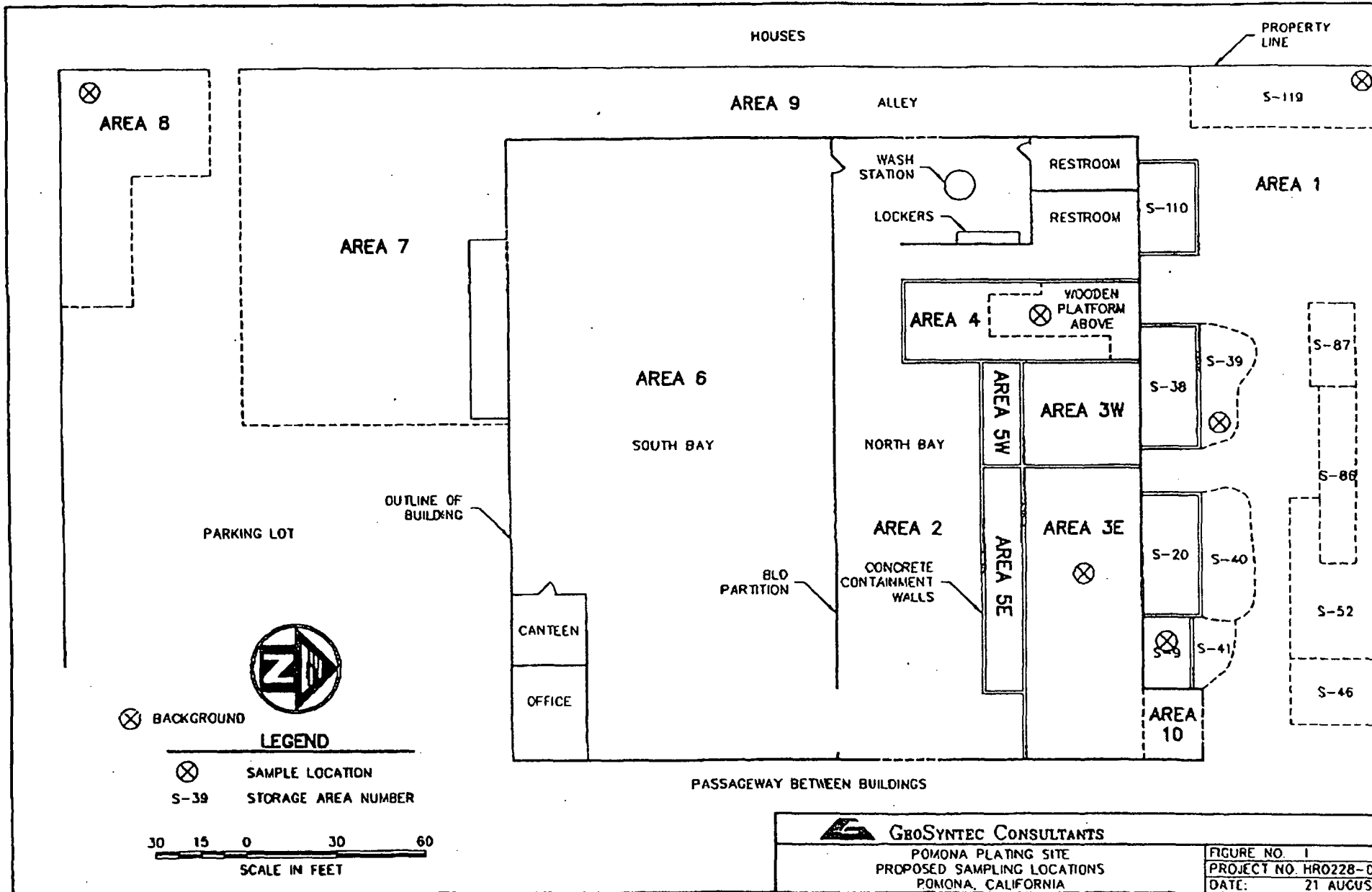
4.3 Rational for Specific Sampling Locations

Drilling and sampling in secondary containment and storage areas in the north open area, will be done because of the past storage of liquids in the secondary containment areas. To the extent practical, drilling and sampling will be done in the middle of the secondary containment area.

Sampling locations at the north west corner of the site adjacent to the fence are proposed because of the presence of the tanks that have been stored along the fence and because the fence is the perimeter of the property and hence a reasonable practical limit of potential soil contamination.

Sampling in the south parking lot is proposed at the southwest corner for these reasons:

- the results of the EPA sampling and testing that indicate possible soil contamination in the area; and



Pomona Plating Site

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- the site perimeter is the likely maximum extent of soil contamination.

Sampling in secondary containment areas of the north bay of the building is proposed because of past operations. The sample locations are selected on the basis that the small containers on and the wooden walkway itself will be removed. The larger containers on the floor slab or on concrete blocks sitting on the floor slab will not be removed because they may be reused for future operations. The actual location of the sampling point will be adjusted on the basis of conditions observed when the wooden walkway is removed, and on the basis of accessibility and safety.

Samples in soil adjacent to retained large containers will be considered representative of conditions at and beneath retained large containers.

A "background" sampling location is proposed in the southeast part of the south parking area. It will be on site and upgradient of the influence of both site buildings.

4.4 Sampling Depths

The initial proposed drilling and sampling depth is 3 ft (1.0 m). If the results from the initial holes indicates a greater depth of contamination, the depth of the affected and subsequent holes will be increased as necessary to establish the extent (depth) of potential soil contamination. The soil will be sampled at one-foot increments, for the purpose of establishing the depth of contamination.

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5. CONCRETE, ASPHALT, AND SOIL SAMPLING

5.1 Surface Cleaning

Surface areas will be cleared and clean prior to drilling and soil sampling to avoid compromising the samples or sub-surface areas.

5.2 Concrete and Asphalt Sampling

Asphalt and concrete cores will be taken during drilling and the process of breaking or drilling through the asphalt and concrete to access the subsurface soil.

5.3 Soil Sampling

The soils will be visually classified by a geotechnical engineer or geologist. Samples will be placed in containers, sealed, and shipped in accordance with standard methods.

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6. OTHER FIELD METHODS AND EQUIPMENT

6.1 Materials and Equipment

The following materials and equipment may be used during the field sampling and analysis program:

- hand auger;
- hand concrete corer;
- hollow stem auger drill rig;
- standard penetration test split spoon sampler;
- barrels for temporary soil storage;
- data logging equipment;
- thin-film geomembrane for auger cuttings;
- miscellaneous field tools, shovels, gloves, duct tape, surveyors tape, sample containers, labels, sample identifications forms, etc.;
- health and safety equipment; and
- decontamination equipment.

Soil sampling boreholes will be advanced with a hand auger. If the soil cannot be penetrated by a hand auger, further work will be done with a hollow stem auger. If the hollow stem auger is unable to penetrate the soils, other appropriate drilling equipment will be brought to site and used for subsequent drilling. It is possible that percussion drilling equipment may be required.

If the hand auger is used, soil samples will be taken from the auger and the borehole. If a hollow stem auger is used, split spoon samples may be retrieved. If it is not possible to retrieve suitable soil samples, alternative sampling equipment may be required. This may occur if the subsurface soils contain appreciable quantities of gravel and cobbles.

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6.2 Sample Documentation

Sampling and field activities will be documented by the field engineer. During hollow stem auger drilling activities, the engineer will document the visual classification of the soils as borings are advanced.

6.3 Borehole Backfilling

Cuttings will be placed on a thin-film geomembrane until the boring is completed. Following completion of the boring, the cuttings will be backfilled into the boring to within 1 ft (0.3 m) of the ground surface. A bentonite grout will be used to backfill the remainder of the boring. Cuttings not backfilled into the boring will be stored in sealed 55-gallon drums. The thin film geomembrane and 55-gallon drums will be disposed of in accordance with the site specific Health and Safety Plan (HASP) and the Site Management Plan (SMP).

Penetrations through the concrete slab and the asphalt will be backfill with concrete.

6.4 Concrete, Soil, and Asphalt Testing

Samples will be tested for metals in accordance with the methods listed in the *Pomona Plating Site Quality Assurance Project Plan*. Results will be compared to the Total Threshold Limit Concentration (TTLC) values. (See California Code of Regulations, Title 22, Paragraph 66261.24)

Sample will also be tested in accordance with the Toxicity Characteristic Leaching Procedure (TCLP). Results will be compared to Soluble Threshold Limit Concentrations (STLC) values.

Pomona Plating Site

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7. TREAT OR DISPOSE OF CONTAMINATED MATERIALS

7.1 General Approach

When the data from implementing the activities described above are available, i.e., when the nature and extent of concrete, asphalt, and soil contamination is defined, the plan for disposing of, stabilizing, or treating affected materials will be compiled and submitted for approval to the USEPA if necessary.

7.2 Cleanup Goals

Concrete, asphalt, and soil will be considered "grossly" contaminated when the level of metals exceeds the TTLC values.

Concrete, asphalt, and soil will be considered clean when it complies with Preliminary Remediation Goals.

7.3 Remediation Alternatives

The following alternative remediation approaches for concrete, asphalt, and soil will be considered if necessary:

- no action and resumption of commercial use of the building because the material is clean and further removal, stabilization, treatment, or disposal is not required;
- encapsulate affected material with concrete slabs, covers, or perimeter containment barriers consistent with the planned future industrial use of the site;
- soil stabilization or treatment as appropriate to control migration of contamination and provide for protection of human health and the environment; or

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- remove and replace affected materials to provide for the planned future commercial use of the site.

Volume II
Attachment E
Geosyntec Final Surface and Subsurface Site Sampling Plan

POMONA PLATING SITE
POMONA, CALIFORNIA
SURFACE AND SUBSURFACE
SOIL SAMPLING
WORKPLAN
Draft

In Response to
EPA Unilateral Administrative Order 98-09

Prepared for:

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FIGURE

Figure 1 Proposed Sampling Locations

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1. INTRODUCTION

1.1 General

This *Surface and Subsurface Soil Sampling Workplan* ("Workplan") responds to the U.S. Environmental Protection Agency (USEPA) Unilateral Administrative Order 98-09 (the Order) for the Pomona Plating Site, at 720 Indigo Court, Pomona, California (the Site).

This Workplan was prepared by GeoSyntec Consultants, Inc. (GeoSyntec) for Mr. David Distefano, owner of the site, for submittal to the USEPA and for implementation subsequent to USEPA approval.

1.2 Purpose

The purpose of the work described in this Workplan is to respond to the fifth and sixth tasks specified in the EPA Order. This Workplan expands on and details the plan for conducting soil sampling and establishing the procedures for, if necessary, disposing of, stabilizing, or treating grossly contaminated soils as outlined in the EPA approved *Pomona Plating Site Workplan* (GeoSyntec Consultants, 10 July 1998).

The *Pomona Plating Site Workplan* states that the work plan activities will consist of:

"Task 5: "Conducting surface and subsurface soil sampling to determine the full nature and extent of soil contamination."

The following is the description of the task implementation in the Pomona Plating Site Workplan:

- establish locations of sampling points on the basis of the Site reconnaissance, the inventory, and the characteristics of the materials;

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- remove or core through the concrete, when necessary, and sample the upper three feet of the soil (i.e., 0 to 1 ft, 2 to 3 ft), probably with a hand auger;
- analyze soil and concrete chip surface samples for chemical contamination, based on the characteristics of the materials on or in containers above the specific sample location; and
- perform additional delineation sampling as warranted from the results of the first phase of sampling and analysis.

Task 6 "Dispose, stabilize, or treat grossly contaminated soils found at or near the surface at the direction of the OSC."

The following is the description of the task implementation in the Pomona Plating Site Workplan:

- develop extent of contamination maps and removal plans for affected soils;
- categorize the subsurface based on level and type of contamination and determine appropriate treatment or disposal; and
- work with a qualified and licensed contractor to excavate, treat, haul and dispose of the wastes in accordance with all applicable regulations."

This Workplan does not address Task 9 *Post-Cleanup Sampling and Analyses: "Provide and implement a post-cleanup sampling and analysis plan"*. The information obtained during execution of the tasks described in this Workplan will, however, provide data that may be used to compile and implement the post-closure sampling and analyses plan, if necessary.

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2. WORKPLAN IMPLEMENTATION OBJECTIVES

2.1 Sampling Objectives

The objectives of the soil sampling work to be done under this Workplan are as follows:

- obtain and test the underlying soil at selected locations in and around the building;
- establish whether or not past operations have affected the subsurface soil; and
- establish the nature and extent of grossly contaminated soils ("affected soil"), if any, at or near the surface.

2.2 Data Use Objectives

The Data Use Objectives for this project are set out in Section 2 of the EPA approved *Pomona Plating Site Quality Assurance Project Plan [GeoSyntec Consultants, 10 July 199] (QAPP)*. As is further relevant to this Workplan and by way of further responding to EPA concerns the following is a more detailed statement of Data Use Objectives.

Soil will be sampled and tested as detailed in Sections 5 and 6 of this Workplan. The proposed soil sampling locations are designated (see Figure 1) to target areas where the soil may be affected as a result of site historical activities. Samples will be tested to establish total metals concentration and pH. The site specific action level is exceedance of the USEPA Region 9 Preliminary Remediation Goals for soil at industrial sites [see "*Region 9 Preliminary Remediation Goals 1996*" Smucker, S.J., et al. August 1, 1996]. If the site specific action level for one or more constituents is exceeded, the soil data will be considered in the light of site specific factors to evaluate alternative remedial actions as listed in Section 7.

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3. PROCEDURES

3.1 Health & Safety

Work will be done in accordance with the *Pomona Plating Site Health and Safety Plan [GeoSyntec Consultants. 10 July 1998]*.

3.2 Quality

Work will be done in accordance with the QAPP. Additional requirements described in Sections 3.3 and 6.0 will also be implemented.

Please note that the QAPP establishes, amongst other things, the project approved Data Quality Objectives, sample equipment decontamination, USEPA testing and analytical methods, quality assurance levels, QA/QC sampling, data validation, etc. To the extent necessary and appropriate to respond to USEPA comments, information from the QAPP is referenced, repeated, or expanded on in this Workplan.

3.3 Additional Procedures

The following standards and guidelines may be used as appropriate:

- ASTM D 1452: Practice for Soil Investigation and Sampling by Auger Borings;
- ASTM D 1586: Test Method for Penetration Test and Split-Barrel Sampling of Soils;

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4. SAMPLE LOCATIONS AND DEPTHS

4.1 Sampling Locations - General

Prior to commencing the sampling work, sampling locations will be established in the field on the basis of accessibility, the visual appearance of the cleared area, and site conditions. The proposed sampling locations are shown on Figure 1.

4.2 Drilling Sequence

The general sequence of drilling and sampling will follow the sequence in which the specific primary locations are discussed in Section 4.3. The actual sequence and location of advancing boreholes will be adjusted to accommodate access and safety considerations and to account for the results of soil testing from previously advanced boreholes.

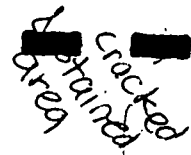
4.3 Rational for Specific Sampling Locations

Drilling and sampling in secondary containment and storage areas in the north open area, will be done because of the past storage of liquids in the secondary containment areas. To the extent practical, drilling and sampling will be done in the middle of the secondary containment areas.

Sampling locations at the north property perimeter and north west corner of the site adjacent to the fence are proposed because of the presence of the tanks that have been stored along the fence and because the fence is the perimeter of the property.

Sampling in Area 7 of the south parking lot is proposed because of the previous stack of materials stored at that location. Sampling at the southwest corner near the site perimeter is proposed to address prior EPA sampling and testing that indicated surface contamination in the area.

Sampling in and adjacent to secondary containment areas of the north bay of the building is proposed because of past plating and waste water treatment operations in this area. The wooden walkways will be removed to facilitate sampling. The larger



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containers, which sit on the floor slab and some of which still contain plating solutions, will not be removed because they may be reused for future operations. The actual location of the sampling point will be adjusted on the basis of conditions observed when the wooden walkway is removed, and on the basis of accessibility and safety. Samples in soil adjacent to retained large containers will be considered representative of conditions at and beneath retained large containers.

Sampling in the south bay is proposed because of the past storage of 1 ton sacks of sludge in that bay.

Sampling in the west alley is proposed because this represents the western limit of the building and the edge of the property.

A "background" sampling location is proposed in the southeast part of the south parking area. It will be on site and upgradient of the influence of both site buildings.

4.4 Sampling Depths

The initial proposed drilling and sampling depth is 3 ft (1.0 m). If the results from the initial holes indicate a greater depth of contamination, the depth of the affected holes will be increased as necessary to establish the extent (depth) of potential soil contamination. The soil will generally be sampled at one-foot increments for the purpose of establishing the depth of contamination.

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5. SOIL SAMPLING

5.1 Surface Cleaning

Surface areas will be cleared and cleaned prior to drilling and soil sampling to avoid compromising the samples or sub-surface areas. This may include localized decontamination in accordance with the procedures in the QAPP Section 4.2.

5.2 Soil Sampling

Soils will be sampled in accordance with the procedures described in QAPP Section 4.1. The soils will be visually classified by a geotechnical engineer or geologist. Samples will be placed in containers, sealed, and shipped in accordance with standard sample handling and chain of custody procedures specified in the QAPP.

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6. OTHER FIELD METHODS AND EQUIPMENT

6.1 Materials and Equipment

The following materials and equipment may be used during the field sampling and analysis program:

- hand auger;
- hand concrete corer;
- hollow stem auger drill rig;
- standard penetration test split spoon sampler;
- barrels for temporary soil storage;
- data logging equipment;
- thin-film geomembrane for auger cuttings;
- miscellaneous field tools, shovels, gloves, duct tape, surveyors tape, sample containers, labels, sample identifications forms, etc.;
- health and safety equipment; and
- decontamination equipment.

Soil sampling borcholes will be advanced with a hand auger. If the soil cannot be penetrated by a hand auger, further work will be done with a hollow stem auger. If the hollow stem auger is unable to penetrate the soils, other appropriate drilling equipment will be brought to the site and used for subsequent drilling. It is possible that percussion drilling equipment may be required.

If the hand auger is used, soil samples will be taken from the auger and the borehole. If a hollow stem auger is used, split spoon samples may be retrieved. If it is not possible to retrieve suitable soil samples, alternative sampling equipment may be required. This may occur if the subsurface soils contain appreciable quantities of gravel and cobbles.

Sample equipment decontamination will be done as described in the QAPP Section 4.2 and will include washing withalconox and water, followed by rinsing with nitric acid, tap water and a final rinse with distilled water.

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6.2 Sample Documentation

Sampling and field activities will be documented by the field engineer in accordance with the QAPP. During hollow stem auger drilling activities, the engineer will document the visual classification of the soils as borings are advanced.

6.3 Borehole Backfilling

Cuttings will be placed on a thin-film geomembrane until the boring is completed. Following completion of the boring, a bentonite grout will be used to backfill the boring. Cuttings not backfilled into the boring will be stored in sealed 55-gallon drums. The thin film geomembrane and 55-gallon drums will be disposed of in accordance with the site specific Health and Safety Plan (HASP) and the Site Management Plan (SMP).

Penetrations through the concrete slab and the asphalt will be backfill with concrete.

6.4 Soil Testing

Sample testing will be done in accordance with the procedures and by the laboratory designated in the QAPP. The certified testing laboratory will be:

Calscience Environmental Laboratories, Inc.
7440 Lincoln Way
Garden Grove, CA 92841-1432
(714) 895-8494.

The Calscience Environmental Laboratories, Inc., California Environmental Testing Laboratory Number (ELAB) is 1230.

Samples will be tested for metals and pH in accordance with the methods and procedures listed in Table 1 of the QAPP. The target analytes were established

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upon historical site information and the results of testing done during previous site investigation activities (including work by the USEPA). Because there is no historical evidence or results of characterization undertaken by the USEPA to indicate that constituents other than those associated with plating operations are likely to exist at the site, the soils analyses will be limited to these selected constituents.

Sample containers will be provided by the laboratory to ensure that adequate volumes are obtained for analyses by the approved USEPA methods.

The referenced USEPA procedures are approved analytical methods. The contracted certified laboratory (Calscience) has established detection limits for each method. These detection limits have been incorporated into the Calscience Standard Operating Procedures, copies of which can be made available on request.

As described in the QAPP Section 6.3, a field duplicate soil sample will be collected to assess the representativeness of the data.

Data quality assurance objectives will be met by implementing the referenced procedures established in the QAPP Section 3.

6.5 Reporting

Field and laboratory data will be managed in accordance with the procedures outlined in the QAPP Section 8. Upon receipt, the analytical data will be validated as described in the QAPP Section 12. This will include review of the sample documentation, holding times, blank analyses, detection limits, and data completeness.

The results of sampling, testing, validation, decision-making, and proposed remedial actions will be provided to the USEPA in project weekly reports and/or stand-alone reports as appropriate.

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7. STABILIZE, TREAT, OR DISPOSE OF MATERIALS

7.1 General Approach

When the data from implementing the activities described above are available, i.e., when the nature and extent of contamination is defined, the plan for treating, stabilizing, or disposing of materials will be compiled and submitted for approval to the USEPA if necessary.

7.2 Site Specific Action Levels

The proposed site specific action level is exceedance of one or more measured constituents of the USEPA Region 9 Preliminary Remediation Goals for soils at industrial sites.

7.3 Remediation Alternatives

If the sampling data indicate exceedances of the Preliminary Remediation Goals then the alternative remediation approaches listed in this section will be considered for each of the sampled areas in the light of several site specific risk factors including the nature of the sampling location (inside or outside of the building), the potential for human contact, the condition of the overlying asphalt or concrete surface, and the potential for further infiltration of water or process liquids.

The following are the alternative remediation approaches to be considered in affected area consistent with the planned future use of the site:

- undertake no action other than site restoration and resumption of commercial use of the building;
- encapsulate affected material by providing low permeability surface treatment to existing or new concrete and/or asphalt;

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- encapsulate affected material by repairing, installing, or replacing concrete slabs, covers, or perimeter containment;
- soil stabilization or treatment as appropriate to control migration of contamination from affected materials and provide for protection of human health and the environment; or
- remove and replace affected materials to provide for protection of human health and the environment.

Prior to undertaking any remediation at the site, GeoSyntec will prepare a proposed remedial action plan, consistent with these remedial alternatives, for EPA review and approval.